

Applied Math Major 2024-2025 Curriculum Chart

Calculus

Complete one sequence

MATH 19A

Calculus for Sci., Engr. & Math
Prerequisites: Math 3 or Math Placement

MATH 19B

Calculus for Sci., Engr. & Math
Prerequisites: Math 19A or Math 20A

OR

MATH 20A

Honors Calculus
Prerequisites: Math Placement Score of 500+ or AP/IB Score Placement

MATH 20B

Honors Calculus
Prerequisites: Math 20A

Linear Algebra & Differential Equations

AM 10 (Strongly Preferred)

Math Methods for Engineers I
Prerequisites: Math Placement or Math 3

OR

MATH 21

Linear Algebra
Prerequisites: Math Placement or Math 3

AND

AM 20 (Strongly Preferred)

Math Methods for Engineers II
Prerequisites: Math 19B or Math 20B and AM 10 or Math 21

OR

MATH 24

Differential Equations
Prerequisites: Math 22 or Math 23A

Discrete Math

CSE 16

Applied Discrete Mathematics
Prerequisites: Math 19A or 19B or Math 11B

OR

MATH 100*

Introduction to Proof and Problem Solving
Prerequisites: Math 11A or 19A or 20A, and Math 21 or AM 10

*Note: MATH 100 is preferred for upper division math electives.

Multivariable Calculus

Complete one sequence

Math 23A

Vector Calculus
Prerequisites: Math 19A or Math 20A or AP Calc BC Score of 4 or 5

OR

AM 30 (Strongly Preferred)

Multivariate Calculus for Engineers
Prerequisites: Am 10 or Math 21, and Math 19B or Math 20B

&

MATH 23B

Vector Calculus
Prerequisites: Math 23A

Lower Division Electives ♦

ELECTIVE

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A list of the lower division electives can be found on the BE Undergraduate Advising website.

Programming

Complete One

CSE 20

Beginning Programming in Python

OR

CSE 13S

Computer Systems and C Programming

OR

ECE 13

Computer Systems and C Programming

OR

ASTR 19

Practical Programming for the Sciences

Upper-Division Courses

AM 100

Mathematical Methods for Engineers
Prerequisites: AM 20 or Math 24, and AM 30 or Math 23B

AM 147

Computational Methods & Applications

Prerequisites: AM 10 or Math 21

or

Math 148

Computational Methods & Applications

Prerequisites: Math 22 or 23A, Math 21 or AM 10, Math 24 or AM 20, and Math 103A or 105A or 152 or AM 147 or CSE 101

AM 112

Introduction to Partial Differential Equations

Prerequisite: AM 100 or Permission

AM 114

Introduction to Dynamical Systems

Prerequisites: AM 10 or MATH 21, AM 20 or MATH 24, and AM 30 or MATH 23A or MATH 22, or PHYS 116A.

AM 129

Foundations of Scientific Computing for Scientists and Engineers

Prerequisites: AM 10 or Math 21, and Math 11A or 19A or 20A.

Basic programming experience is assumed.

STAT 131

Introduction to Probability Theory

Prerequisites: AM 11B or Econ 11B or Math 11B or Math 19B or Math 20B

OR

CSE 107

Probability & Statistics for Engineers

Prerequisites: CSE 16 and AM 30 or Math 22 or Math 23A

Comprehensive Requirement

AM 170A ♣

Mathematical Modeling 1

Prerequisites: AM 30, AM 114 or AM 214, Stat 131 or CSE 107, and completion of the Writing and Composition requirements

AND

AM 170B

Mathematical Modeling 2

Prerequisites: AM 129 or AM 209, AM 112, AM 147, and AM 170A

♣The DC requirement is satisfied by completing AM 170A.

Upper-Division Electives ♠

ELECTIVE

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A list of the upper division electives can be found on the BE Undergraduate Advising website here:

<https://undergrad.soe.ucsc.edu/applied-math-upper-division-electives>.

Applied Math Major 2024-2025 Curriculum Chart

Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

Fall _____	Winter _____	Spring _____	Summer _____

Key Legend

Students are required to take two lower-division electives in preparation for the upper division electives. Students are encouraged to plan ahead carefully in consultation with undergraduate advising in making their selection.

♥ Students are required to take three upper-division elective courses. 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. Please review the [Applied Math Career Electives document](#) as you select upper division electives that align with your professional goals: <https://docs.google.com/document/d/1dhLayvCKhc4PsO87nT5-apR5h-yIkyfWjYRWSNe2hOE/edit?usp=sharing>

Note:
The prerequisites listed on this curriculum chart are accurate as of August 15, 2024 according to UCSC's general catalog. Prerequisites listed on this chart are subject to change and students should refer to the catalog for the most up to date requirements.