

Exercise Physiology

Online

Instructor: Rita Mehta

Summer, 2025

COURSE INFORMATION

This course introduces students to fundamental concepts relating to exercise Physiology in vertebrates. We will go over in detail the various categories of exercise recognized, how physiologists research exercise, and misconceptions about exercise.

Each topic will be covered through a series of thematic modules that are sequential and iteratively build on previously presented content. Modules will consist of several components including synchronous lectures, short video clips, worksheets/problem sets, and in-class participation activities. There will be 5 modules for each week that corresponds to a class topic. The modules will typically consist of 3 lectures, and new modules will be accessible on CANVAS after completion of the previous module in class. In addition, students are required to attend two weekly lab sections which involve lecture material review, structured activities that students will perform on their own, and quizzes.

INSTRUCTOR INFORMATION

Rita Mehta

Email: rmehta2@ucsc.edu

Office Hours: Tuesdays after lab or by appointment

Best way to contact me is via email or through CANVAS

LEARNING OUTCOMES

This course introduces students to fundamental concepts related to Exercise Physiology and consist of the key student outcomes.

1. Determine the key organ systems that power exercise in vertebrates
2. Understand vertebrate response to exercise
3. Identify our control centers and what they do during exercise
4. Determine the best way to fuel for exercise
5. Understand Environment-exercise interactions.

Key topics relating to exercise include

1. Stress response
2. Types of exercise
3. Metabolism and effects of types of exercise on metabolism
4. Muscle biology
5. Environmental effects on exercise and our bodies' response
6. Exercise induced effects on the cardiovascular system
7. Effects of training regimes (short term and long term)
8. Factors influencing exercise performance

Weekly Instruction for Summer Session:

NOTE: Syllabus is always subject for revision and each lecture has active
learning components

	Lecture Topics/Midterms	Readings & Assignments	
Week 1: Lectures 1 & 2	General Introduction; Introduction to teaching team, syllabus, Intro to Exercise Physiology; Homeostasis, biological controls, and general adaptation syndrome	Lecture Readings <i>Historical Overview, Ch 0</i> <i>Begin reading Chapter 3:</i> <i>Bioenergetics</i>	Assignment Quizzes (due Sunday @ midnight), Quiz 0, Quiz 1
Lectures 3 & 4	Response to Exercise	<i>Read Chapter 3:</i> <i>Bioenergetics</i>	Forming Habits Quiz 2
Week 2	Bioenergetics/Metabolism		Quiz 3
Lecture 5 & 6	Bioenergetics	<i>Finish Ch 3 Bioenergetics</i> Review for Exam	Midterm Exam
Lecture 7 & 8	Exercise Metabolism	<i>Read Chapter 4: Exercise Metabolism</i>	Quiz 4
Week 3	Regulating Temperature		
Lecture 9 & 10	Exercise Metabolism Cont'd	<i>Journal Article TREE</i>	Quiz 5
Lecture 11 & 12	Temperature Regulation, Part 1 & Part II		Quiz 6 Read Sports Gene Ch -8 (Vitruvian NBA Player)
Week 4	Effects on CV system		
Lecture 5 & 6	Regulation of the Heart	<i>Read Chapter 9,</i> <i>Circulatory Responses</i>	Quiz 7
Lecture 7 & 8	Hemodynamics	Review for Exam	Midterm Exam
Week 5	Training Performance		
Lecture 9 & 10	Principles of Training; Adaptation of training		Quiz 8 & 9
Final Exam	Review for Exam	Final Exam	

REQUIRED READING MATERIALS POSTED ON CANVAS

We will be using Exercise Physiology by Scott Powers et al. 12th Ed. There will be an assortment of chapters provided on CANVAS. You are responsible for reading these chapters. Along with text book chapters, there will be a few chapters from the popular sports book, The sports Gene by David Epstein. Lastly, we will provide a peer reviewed article on Thermal Tolerance and Temperature Regulation in Vertebrates published in the journal *Trends in Ecology and Evolution*.

ASSIGNMENTS & ASSESSMENT

Exams: There will be three exams – two midterms and one cumulative final that will cover the course. Exams will be conducted online using CANVAS. The exams will be closed

note and no use of AI. There will also be a verbal communication portion of the exam for the two midterms and final. This will take place in lab section. Details of the verbal communication will be presented in lecture. Any violation of academic integrity on this matter will be dealt with severely and will include receiving a failing grade for the class as well as referral to the Dean of Students for academic misconduct proceedings with a potential for a 3-quarter suspension or expulsion. Each exam will be worth 20% of a student's grade (total 60%)

Worksheets: Each module will include 2 worksheets that will be completed in lecture and will be part of our active learning components. Worksheets will make up 20% of a student's grade and are due towards the end of the lecture. Each student is responsible for uploading their worksheets onto CANVAS by a certain time.

Quizzes: Students are required to complete two quiz assessments each week after the synchronous lectures and activities. These quizzes will comprise 15% of a student's grade.

In-Class Activities: There will be at least two in 10-20 minute in-class activities during lectures. Students will work cooperatively on these in small (3-5 person) breakout rooms. These will relate to topics covered in lecture. Participation with in- class activities will make up 5% of a student's grade

Lectures will be recorded (audio and slides only) and posted later the same day on the Yuja tab of the class canvas page so students will have the opportunity to listen to the lecture if they missed attending it in person if they request access from the instructor.

You should budget approximately 30 hours/week. Here is a suggested way to structure your calendar for success in this class (note that this does not include lab which has different and complementary requirements):

Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1-5	Pre-lecture reading & quiz /independent project outline 6 hours	Course time / literature review 4 hours	Pre-lecture reading and quiz / project literature review 4 hours	Course time/Summarize literature review/identify questions 5 hours	Homework/ summaries / Experimental design 6 hours	Homework/ summaries/ review 3 hours	Homework/ summaries/ review/ final project 6 hours

ACCESSIBILITY

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 course, please affiliate with the DRC. I encourage all students to benefit from learning more about DRC services to contact DRC by phone at 831-459-2089 or by email at drc@ucsc.edu. For students already affiliated, make sure that you have requested Academic Access Letters, where you intend to use accommodations. These letters outlining your accommodations will be provided to your instructor through the platform **Accommodate**. You can also request to meet privately with your instructor during office hours or by appointment to discuss accommodations as soon as possible. I welcome

discussions about how we can implement your accommodations in this course to ensure your access, full engagement, and success.

TITLE IX/CARE ADVISORY

UC Santa Cruz is committed to providing a safe learning environment that is free of all forms of gender discrimination and sexual harassment, which are explicitly prohibited under Title IX. If you have experienced any form of sexual harassment, sexual assault, domestic violence, dating violence, or stalking, know that you are not alone. The Title IX Office, the Campus Advocacy, Resources & Education (CARE) office, and Counseling & Psychological Services (CAPS) are all resources that you can rely on for support.

Please be aware that if you tell me about a situation involving Title IX misconduct, I am required to share this information with the Title IX Coordinator. This reporting responsibility also applies to course TAs and tutors (as well to all UCSC employees who are not designated as “confidential” employees, which is a special designation granted to counselors and CARE advocates). Although I have to make that notification, you will control how your case will be handled, including whether or not you wish to pursue a formal complaint. The goal is to make sure that you are aware of the range of options available to you and that you have access to the resources you need.

Confidential resources are available through [CARE](#). Confidentiality means CARE advocates will not share any information with Title IX, the police, parents, or anyone else without explicit permission. CARE advocates are trained to support you in understanding your rights and options, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more. You can contact CARE at (831) 502-2273 or care@ucsc.edu.

In addition to CARE, these resources are available to you:

- If you need help figuring out what resources you or someone else might need, visit the [Sexual Violence Prevention & Response \(SAFE\) website](#), which provides information and resources for different situations.
- [Counseling & Psychological Services \(CAPS\)](#) can provide confidential counseling support. Call them at (831) 459-2628.
- You can report gender discrimination and sexual harassment and violence directly to the University’s [Title IX Office](#) by calling (831) 459-2462 or by using their [online reporting tool](#).
- Reports to law enforcement can be made to the UC Police Department, (831) 459-2231 ext. 1.
- For emergencies, call 911.

You can find further examples of Title IX and CARE statements in the TLC’s [Title IX and CARE Statements](#) guide.

ACADEMIC INTEGRITY

A sample academic integrity statement follows, but you are encouraged to compose a policy that reflects your teaching philosophy and the norms and priorities of your field and department.

All members of the UCSC community benefit from an environment of trust, honesty, fairness, respect, and responsibility. You are expected to present your own work and acknowledge the work of others in order to preserve the integrity of scholarship.

Academic integrity includes:

- Following exam rules
- Using only permitted materials during an exam
- Viewing exam materials only when permitted by your instructor
- Keeping what you know about an exam to yourself
- Incorporating proper citation of all sources of information
- Submitting your own original work

Academic misconduct includes, but is not limited to, the following:

- Disclosing exam content during or after you have taken an exam
- Accessing exam materials without permission
- Copying/purchasing any material from another student, or from another source, that is submitted for grading as your own
- Plagiarism, including use of Internet material without proper citation
- Submitting work that was produced by artificial intelligence (e.g., ChatGPT)
- Using cell phones or other electronics to obtain outside information during an exam without explicit permission from the instructor
- Submitting your own work in one class that was completed for another class (self-plagiarism) without prior permission from the instructor.
- Violations of the Academic Integrity policy can result in dismissal from the university and a permanent notation on a student's transcript. For the full policy and disciplinary procedures on academic dishonesty, students and instructors should refer to the [Academic Misconduct page](#) at the [Division of Undergraduate Education](#).

GENERATIVE ARTIFICIAL INTELLIGENCE

Students should not use GAI to generate answers for graded assignments or exams. Your insights, arguments, and descriptions should be your original thoughts. Violations will be considered academic dishonesty and subject to disciplinary sanctions. Using GAI to refine or paraphrase your work is acceptable, but the core ideas must be original. If you use GAI to help outline, edit, or aid in completing an assignment, you must cite this and provide a 1-2 sentence description of how GAI was used (e.g., editor, idea generator, data visualization). Failure to cite GAI use, like any other source, is considered plagiarism.

STUDENT SERVICES

Counseling and Psychological Services

Many students at UC Santa Cruz face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings.

Campus Mobile Crisis Team

If you are concerned about yourself or someone around you and feel they may be having a behavioral health crisis, do not hesitate to call our team. Behavioral Health concerns can include mental health or substance use related situations where you or someone around you may be a danger to self or others. Dial [831-502-9988](tel:831-502-9988) to reach the team.

Reporting and Support Services

A resource to help students, faculty, staff and others report acts of bias as well as discrimination and harassment.

Student Success and Engagement Hub

The Division of Student Success provides campus-wide coordination and leadership for student success programs and activities across departments, divisions, the colleges, and administrative units.

Slug Support Program

College can be a challenging time for students and during times of stress it is not always easy to find the help you need. Slug Support can give help with everything from basic needs (housing, food, or financial insecurity) to getting the technology you need during remote instruction. To get started with SLUG Support, please contact the [Dean of Students](#) Office at 831-459-4446 or you may send us an email at deanofstudents@ucsc.edu.

Slug Help/Technology

The ITS Support Center is your single point of contact for all issues, problems or questions related to technology services and computing at UC Santa Cruz. To get technological help, simply email help@ucsc.edu.

On-Campus Emergency Contacts

For all other help and support, including the health center and emergency services, Click here to go to UCSC's [Emergency Services](#) page. **Always dial 9-1-1 in the case of an emergency.**