

Integrative Biology 148
COMPARATIVE ANIMAL PHYSIOLOGY
Fall 2022
Control Number: **23805**

SYLLABUS

Instructors:

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Professor Robert Dudley

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Graduate student instructors:

Leah Lee

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Mattina Alonge

Office hours: Monday 9:00AM-10:00AM, Remote, Zoom Meeting ID: 493 767 7980 Passcode:
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Lectures: TuTh 11:00AM-12:30PM; 145 - Dwinelle

All lectures will be **in-person**. Access will be through bCourses. We will make every effort to post PDFs the day before the scheduled lecture date in Files Folder / Lectures and they will remain available.

Required Text: *"Animal Physiology" 2021. 5/e by Hill, Anderson, and Cavanaugh. Oxford University Press. ISBN: 9780197553596; ISBN: 978-0197552438 (Loose Leaf Edition – Acceptable)*

Please see all your options at CalCentral (<https://calcentral.berkeley.edu/academics/teaching-semester/fall-2022/class/integbi-148-2022-D>)

Rationale:

The course discusses principles of how organisms work in their environment. Muscular, neural, sensory, respiratory, circulatory, digestive, osmoregulatory and energetic systems are considered. The biodiversity of animals, both invertebrate and vertebrate will be illustrated, and the relevance of physiology and structure is presented. Lectures, discussions and exams will emphasize general principles and integration of information rather than rote memorization. A major goal is to give students the opportunity to critically evaluate and present current research.

Social Mixer Gallery to Facilitate Teaming:

In this class, you will form teams that will deliver Symposium Presentations on a research publication of your choice. We propose to create a Group Slide Gallery containing information about you so that you can get to know your classmates in your team. On one PowerPoint Slide (.pptx), you will introduce yourself to your classmates with pictures, preferences, and your expertise. Of course, your participation is optional. You need not add all the requested information. Practically, we hope this will facilitate teaming for the symposium presentations later in the semester.

Grading:

- 1. Lecture Assignments.** Each lecture will be accompanied by a bCourses Assignment with two questions and a request to add one citation that will be due on Fridays. After the lecture, select a single **concept** and/or **principle** that was new to you and caught your interest. Please explain it as a text submission to this assignment (250 words max). The second part is a **lecture question** that will direct you to a Google form where you will enter your name, discussion section, and any question that you have about the lecture. We will answer your questions in subsequent discussion sections (250 words max). Please add one citation from the literature to the Google Form that broadly relates to the lecture. There is no best choice, just one that interests you. Use standard reference formatting (e.g., Glazier, Douglas S. "Complications with body-size correction in comparative biology: possible solutions and an appeal for new approaches." *Journal of Experimental Biology* 225.Suppl_1 (2022): jeb243313.)
- 2. Exams.** Mid-term and Final Exams will cover material from the lectures. They will consist of you selecting a scientific publication. Your exams will NOT be the typical one to three-hour proctored exams. We have designed a new, far less stressful, and more representative exam. You will be given 7 days to complete the midterm exam and 14 days to complete the final exam. Exams will consist of you selecting scientific publications, telling us how the discovery uses the concepts learned in class, and using these concepts to interpret data in plots and tables.
 - **Midterm Exam:** Given on October 4 and due October 11. Will be 30% of the total grade. It will cover lecture material from August 25 through and including October 4 and discussion section material through October 10. You will have one week to submit the midterm exam as an Assignment.
 - **Final Exam:** Given November 30 and due 11:00AM on December 14, the exam will be 30% of the total grade. You will have two weeks to submit the final exam as an Assignment. The final exam will be like the midterm exam but covering lecture material from October 6 through the end of the course and discussion section material from October 12 through the end of the course. You will select a research paper related to the second half material AND include the interaction of at least TWO physiological systems and repeat the analysis.
- 3. Team Presentation.** A team presentation in a symposium format is required. Given in the second half of the semester, it will be 30% of the total grade. You will form teams of 6 students, select a research publication on a physiological discovery, "become" the authors, and give a 20 min presentation using PowerPoint. Teams will first provide a general background, discuss the methods and results, and then critically evaluate the conclusions.

The presentation will end by asking what appropriate next steps might be and where the field is going overall. All other groups will then ask questions to the team in class.

Final Grade. Your final grade will be determined in the following way:

10%: (60 pts. 3 pts. each) Lecture Assignments - a reflection, a question, and a citation on the lecture (20 assignments).

30%: (200 pts.) Midterm exam #1

30%: (200 pts.) Final exam (15% = midterm #2, and 15% = material showing integration)

25%: (167 pts.) Team Presentations

5%: (33 pts.) Questions to Team Presenting

660 possible points. Final grades are based both on an absolute scale as well as a curve, along with potential positive effort adjustments. Our absolute scale is approximately 100-80 A; 80-70 B; 70-60 C; 60-50 D; <50 F (including + and -). Curve – In the unlikely event that grading shows that the absolute scale is too high, we will lower the curve. We will not raise it to make it more difficult to get a grade. At the end of the semester, we will all meet to discuss any student who is in the gray zone between grades. If you have shown effort, engagement, and improvement, you will receive the next higher grade. We will not pull down a student to a lower grade.

Disabled Students:

Disabled students must make sure that we receive a communication from the Disabled Students Program as soon as possible so that appropriate accommodations can be made. See <http://dsp.berkeley.edu>

Discussion Sections:

We will have in-person Discussions at the regularly scheduled times on Monday or Wednesday. We will present material and answer your questions. Material covered in discussion sections will complement and expand upon topics introduced in lecture. Specific examples of general principles will be discussed, opportunities for review of lecture and reading material will be provided, and sample problems will be worked on. We will discuss the questions you submitted for the lecture Assignments. In the second half of the semester, time will be provided to work on your in-class presentations.

Course: INTEGRATIVE BIOLOGY 148 S 101 DIS

Location: Wed 1-2P, 209 - Dwinelle

Course Control Number: 23806

Course: INTEGRATIVE BIOLOGY 148 S 102 DIS

Location: Wed 2-3P, 2062 - Valley Life Sciences

Course Control Number: 3807

Course: INTEGRATIVE BIOLOGY 148 S 103 DIS

Location: Wed 3-4P, 283 - Dwinelle

Course Control Number: 3808

Course: INTEGRATIVE BIOLOGY 148 S 104 DIS

Location: Mon 12-1P, 215 - Dwinelle

Course Control Number: 38069

Ed Discussion (EdD) - Online Discussion Forum:

We will use Ed Discussion (EdD) as our online forum. EdD is a venue to ask questions, discuss problems, and help each other out. EdD is a question-and-answer system designed to streamline class discussion outside of the classroom. It should always be your first recourse for seeking answers to your questions about the course, lecture or reading material, or the assignments. You are encouraged to post any questions you might have about the course material, logistics, and assignments. Please post questions about the material or the administration of the course to the discussion board - but before posting a question, read the discussion board and the syllabus and other course materials in case the question has already been answered. If you know the answer to a question, you are encouraged to post it. By default, your posts are visible to the course staff and other students, and you should prefer this mode so that others can benefit from your question and the answer. We will monitor the discussion board, endorse answers, and reply. You can post privately so that only the course staff can see your question. If you post privately, we reserve the right to make your question public if we think the class will benefit. You can also post anonymously if you wish. Do not post your SID on EdD. Please avoid email if EdD will do. Posts may be anonymous to the class, but not to the instructor. We expect that posts will be pertinent and respectful. Don't use EdD as a place to complain about, insult or harass anyone. Please do send us email if you have a real emergency or need to discuss something privately.

Web Site:

We will use a bCourses site for the syllabus, reading assignments, announcements, presentations and lecture material. You may access the site by going to: <https://bcourses.berkeley.edu>, login through CalNet.

**INTEGRATIVE BIOLOGY 148
COMPARATIVE ANIMAL PHYSIOLOGY
TENTATIVE LECTURE & DISCUSSION SCHEDULE, Fall 2022
Tuesday & Thursday, 11:00AM - 12:30PM**

Date	Lecture	Discussion	Readings
25 August	1. Course Orientation /Logistics – Introduction		pgs. 2-33
30 August	2. Body size		pgs. 173-192; App. D-F, J
29&31 August		1. Introductions and Literature searching	
1 September	3. Nervous systems I		pgs. 313-345
6 September	4. Nervous systems II		pgs. 347-378
5&7 September		Holiday and No Discussion	
12&14 September		2. Body Size and Nervous System – Questions	
8 September	5. Sensory systems I		pgs. 379-418; pgs. 421-423
13 September	6. Sensory systems II		pgs. 529-550; pgs. 572-573
19&21 September		3. Sensory System – Questions Begin Team Formation	
15 September	7. Muscular system I		pgs. 551-560
20 September	8. Muscular system II		pgs. 561-571
26&28		4. Muscle System – Questions	

September		Final Team Formation	
22 September	9. Gas transport I		pgs. 601-614; pgs. 653-677
27 September	10. Gas transport II		pgs. 230-234; pgs. 617-651
3&5 October		5. Gas Transport System – Questions; Midterm Assistance	
29 September	11. Circulation I		pgs. 687-706
4 October	12. Circulation II		pgs. 707-722
10&12 October		6. Circulation System – Questions	
6 October	13. Diving		pgs. 723-742
11 October	MIDTERM EXAM – No Class		
17&19 October		7. Diving Systems – Questions	
13 October	14. Osmoregulation I		pgs. 743-802
18 October	15. Osmoregulation II		pgs. 803-855
24&26 October		8. Osmoregulation System – Questions	
20 October	16. Digestion		pgs. 133-170
25 October	17. Energetics I		pgs. 171-238
31 October & Nov. 2		9. Digestion Systems and Energetics – Questions	
27 October	18. Energetics II		pgs. 239-310
1 November	19. Presentations		
7&9 November		10. Energetics – Questions	
3 November	20. Presentations		
8 November	21. Presentations		
14&16 November		11. Questions & Presentation Assistance	
10 November	22. Presentations		
15 November	23. Presentations		
21&23 November		12. Questions & Presentation Assistance Final Exam Assistance	
17 November	24. Presentations		
22 November	25. Presentations		
24 November	Holiday		
25 November	Holiday		
29 November	26. Presentations		
30 November		13. Questions & Presentation Assistance; Final Exam Assistance	
1 December	27. Overview		
14 December	FINAL EXAM		

Assistance, Policies & Conduct

A Perspective on Course Redesign for the Times

We can't imagine all the challenges and inequities you might have been and still be experiencing. It is your course and we are here to help. Please do not hesitate to alert us to any issues beyond the course that you have with housing or food security, physical and mental health, connectivity, or safety. Do not feel embarrassed to ask for help. Remember

that seeking help is a courageous thing to do—for yourself and for those who care about you. See our General Support Availability Announcement below.

Our goal for this course is to preserve and enhance all the features and experiences that students have told us in the past are most valuable. We are now adding new solutions to enhance the course that we developed and tested during remote delivery the last 2 years. Based on the experimentation and feedback we received from students, we have created new approaches that directly deal with existing inequities that were exacerbated by the pandemic and racial trauma. We always welcome new ideas.

Coronavirus Classroom (<https://coronavirus.berkeley.edu/>) and Campus Access (<https://coronavirus.berkeley.edu/campus-access/>)

1. [Comply with current face-covering requirements](#). EH&S is providing free [masks in Eshleman Hall](#). Face coverings are no longer required, but strongly recommended indoors.
2. [Activate CA Notify](#)
3. Comply with all posted signage and requirement to not enter facilities if experiencing symptoms of COVID-19.
5. Mitigation for Fall 2022 (<https://sa.berkeley.edu/covid19/messages/2022/8/4/covid-19-mitigation-measures-fall-2022>) and Testing (<https://uhs.berkeley.edu/coronavirus/testing-covid-19>).
4. [Comply with University of California COVID-19 Vaccine Policy](#) (full vaccination with booster)
6. [Comply with University of California Flu Vaccine Policy](#)
7. [Campus has transitioned to a vending machine option to get free at-home PCR tests.](#)

Monkeypox information. [Transmission and vaccines.](#)

General Support Availability Announcement

We pledge to make your experience this semester worth your effort.

Inclusion: We are committed to creating an environment welcoming of all students where everyone can fulfill their potential for learning. To do so, we intend to support a diversity of perspectives and experiences and respect each other's identities and backgrounds (including race/ethnicity, nationality, gender identity, socioeconomic class, sexual orientation, language, religion, ability, etc.). If you need accommodations that provide equitable access, (e.g., religious observance, physical or mental health concerns, insufficient resources, etc.) please check <https://diversity.berkeley.edu/>. If you have a name and/or pronouns that differ from your legal name, designate a preferred name for use in the classroom at: <https://registrar.berkeley.edu/academic-records/your-name-records-rosters>. As a participant in this class, please recognize that you can be proactive about making other students feel included and respected.

Resources & Support for Sexual Harassment and Assault: The University of California is committed to creating and maintaining a community where all individuals who participate in University programs and activities can work and learn together in an environment free of harassment, exploitation, or intimidation. Sexual harassment and violence are prohibited both by law and by University of California policy. Sexual harassment is defined as unwelcome sexual advances; requests for sexual favors; and other verbal, nonverbal or physical contact

of a sexual nature. Sexual harassment includes conduct that explicitly or implicitly affects a person's employment or education or interferes with a person's work or educational performance or creates an environment such that a reasonable person would find the conduct intimidating, hostile or offensive. Sexual harassment includes sexual violence.

<https://sa.berkeley.edu/conduct/sexual-harassment>

Disabled Student's Program (DSP 260 César Chávez Student Center #4250; 510-642-0518). DSP serves students with disabilities of all kinds, including temporary disabilities.

<https://dsp.berkeley.edu/students>

COVID-19 resources and support. We care about your health and safety. Please check:

<https://coronavirus.berkeley.edu>

<https://uhs.berkeley.edu>

This includes support for mental health issues at Counseling and Psychological Services (CAPS)

<https://uhs.berkeley.edu/caps>

and Crisis Counseling for Urgent Concerns

<https://uhs.berkeley.edu/counseling/urgent>

The Division of Equity & Inclusion is providing support virtually for:

Basic needs – Food and Housing

<https://basicneeds.berkeley.edu>

<https://sa.berkeley.edu/covid19>

Disability Access & Compliance

<https://dac.berkeley.edu/message-campus-disability-community-re-covid-19>

Health and Wellness

<https://diversity.berkeley.edu/health-and-wellness>

Student Technology Equity Program (STEP)

Resource for connecting laptops, Wi-fi hotspots, and other technology you might need.

<https://technology.berkeley.edu/STEP>

Academic Accommodations Hub

This site provides support resources and academic accommodations to ensure all students have a fair chance at academic success.

<https://evcp.berkeley.edu/programs-resources/academic-accommodations-hub>

Privacy for Recorded Discussion Sections or Q&A Sessions

<https://ethics.berkeley.edu/privacy-considerations-when-using-zoom>

Please view these best practices. Your privacy is important and your choices need not be justified. They will never be held against you. In Zoom, please feel free to turn off video, change your name, or use Virtual Backgrounds. We will notify you when we record the Session so that others, particularly disadvantaged by home/work disruptions or time zones, can participate as much as possible. Please let us know if there are any issues that make you feel uncomfortable.

Grading & Exam Format and Proctoring

We have participated in UC Berkeley's Grading for Equity - Promoting Excellence in All Students Through Equitable Grading and Assessment Workshop Series.

As a result, we have redesigned our course assignments to reduce stress, eliminate proctoring, be as fair as possible, and even enhance your learning experience.

The student community at UC Berkeley has adopted the following Honor Code.

“As a member of the UC Berkeley community, I act with honesty, integrity, and respect for others.” The expectation is that you will adhere to this code, as your instructors pledge to do as well. For more information, please visit this website:

<https://teaching.berkeley.edu/berkeley-honor-code>

Policy on UC Berkeley’s Code of Student Conduct. All students are expected to follow the University of California at Berkeley’s Campus Code of Student Conduct, as is published at <http://sa.berkeley.edu/uga/codeofconduct>. Cheating, plagiarism, or any other form of academic dishonesty will not be tolerated (102.01).

Policy on plagiarism. In academia ideas are our commodity. Taking direct text or ideas or data or results from someone else’s work without properly giving credit is essentially stealing. Representing them as your own is unethical and disrespectful. This is unacceptable in a university and we take it very seriously here at UC Berkeley. We will pursue disciplinary action against students who plagiarize in this class.

Policy on accommodation of religious holidays and other scheduling conflicts: In compliance with Education code, Section 92640(a), it is the official policy of the University of California at Berkeley to permit any student to undergo a test or examination, without penalty, at a time when that activity would not violate the student's religious creed, unless administering the examination at an alternative time would impose an undue hardship which could not reasonably have been avoided. All deadlines and the midterm exam date (Oct. 11) are noted on this syllabus. It is your responsibility to note any conflicts with the exam and due dates and let the instructor and GSIs know. If you have other scheduling conflicts, please see the guidelines at:

<https://teaching.berkeley.edu/checklist-scheduling-conflicts-academic-requirements>

Policy on exams, lecture, and design assignments due dates. We will have due dates for all assignments. Keeping pace is in your best interest, because material builds on that all comes before. Given challenging circumstances and the inequities present, we will be as flexible as possible with due dates. If you do find yourself facing an unforeseen circumstance, please contact us as soon as possible to let us know.

Policy on students with learning disabilities. Disabled students please make certain that your communication from the Disabled Students Program is sent to us as soon as possible. See <http://dsp.berkeley.edu>

Policy on recording lectures or selling slides or notes. Posting or selling video recordings are expressly prohibited by University of California policy. Lectures are comprised of copyrighted intellectual material, and the recording and sharing of that material without express permission is a violation of copyright and personal privacy. Additionally, the discussion of sensitive issues in this class requires that students feel safe to express their opinions without fear of future reprisal or exposure. Note, it is a violation of copyright to sell notes, assignments or exams to on-line companies.

Land Acknowledgement (<https://cejce.berkeley.edu/ohloneland>)