

SYLLABUS

BIOL 543: Comparative Physiology, Fall 2019

GENERAL INFORMATION

Schedule: Tuesday and Thursday; 4:25 PM – 5:40 PM (online via Blackboard Collaborate)

Instructor: Dr. Daniel I. Speiser

Office: CLS 606

Phone #: 803-777-6597

Email: speiser@mailbox.sc.edu

Website: See Blackboard for course documents and announcements.

Office Hours: I will not be holding in-person office hours this semester. Please contact me by email. We can then arrange a time to talk by email, phone, or video. If you send me an email between 9am and 5pm, I will do my best to respond the same day. Please do not expect immediate responses to emails sent after normal work hours (i.e. later than 5pm). However, given the circumstances, I will do my best to respond to emails sent at any time.

Required Text: *Animal Physiology, Fourth Edition* (2016) Richard W. Hill, Gordon A. Wyse and Margaret Anderson (Sinauer; ISBN: 978-1-60535-471-2).

Other Required Resources: A scientific calculator capable of calculating logs, exponents, and roots. Primary literature will be made available to students by the instructor via Blackboard.

Graduate Students: As this is a 500 level class, it is available to graduate students as graduate credit. Graduate students will be expected to prepare and be evaluated on an additional specific assignment, developed through discussion with the instructor.

Students with diagnosed learning disabilities: I am committed to ensuring course accessibility for all students. If you have a documented disability and expect reasonable accommodation to complete course requirements, please notify me at least one week before accommodation is needed. Please also provide SDRC (https://sc.edu/about/offices_and_divisions/student_disability_resource_center/) documentation to me before requesting accommodation. Likewise, if you are aware of cognitive or emotional triggers that could disrupt your intellectual or mental health, please let me know so that I can be aware in terms of course content. Please note that none of the assignments in the course will have time limits and that all will be open-book and open-note.

COURSE DESCRIPTION

Comparative Physiology (BIOL 543), taught by Assistant Professor Daniel Speiser, uses an integrative and comparative approach to understand how animals function. In particular, the course will focus on the fundamental questions that life asks of all animals and the different ways that animals answer these questions. In some cases, different animals solve similar problems in similar ways; in other cases, different animals solve similar problems in dissimilar ways. We have much to learn from both scenarios.

The course embraces August Krogh's belief that "For a large number of problems there will be some animal of choice or a few such animals in which it can be most conveniently studied." A comparative understanding of diverse animals (*e.g.* sponges, cnidarians, molluscs, arthropods, and vertebrates) is thus viewed as advantageous, with different types of animals emerging as model systems for illustrating the general principles that underlie how animals answer the fundamental questions of life.

Comparative Physiology will establish a foundational knowledge for students continuing in a variety of careers, ranging from biological research to engineering to medicine. I hope the course helps students appreciate the importance of biodiversity, both for its own sake and for our own. The topics in physiology we will cover include Feeding and Digestion, Metabolism, Thermoregulation, Respiration, Circulation, Osmoregulation, Endocrine Systems, Nervous Systems, and Muscle and Locomotion.

LEARNING OUTCOMES

The goal of Comparative Physiology (BIOL 543) is to have students explore, expand, integrate, and assess their knowledge of the biological principles that underlie how animals – including humans – function, and to do so in an integrative and comparative manner. All learning outcomes for the online version of the course are equivalent to those of the face-to-face (F2F) version of the course

Upon successful completion of BIOL 543, undergraduate students should be able to:

1. **Compare, contrast**, and otherwise **evaluate** the different physiological systems that animals have evolved to address the major physiological questions posed by life on our planet;
2. **Describe** the structural principles and molecular mechanisms that underlie these different physiological solutions to life's problems;
3. **Interpret** graphs, charts, and tables relevant to comparative physiology;
4. **Apply** the fundamental mathematical models of physiology in an appropriate manner.

Upon successful completion of BIOL 543, graduate students should be able to:

1. **Apply** the skills and knowledge gained in lecture to a mock grant proposal describing an experiment relevant to the field of comparative physiology on a topic of their choice.

COURSE EXPECTATIONS

Fundamentals: Comparative Physiology builds on a foundation of general biology, mathematics, and your prior experience with the natural world. We will review certain fundamental concepts in biology, but please consult the instructor in the first or second week of class if you are concerned about the adequacy of your preparation.

Schedule: A *tentative* timeline for the course is posted on Blackboard. The dates of the lectures and assignments will not change. However, topics for each day may change. Any changes or clarifications will be announced in class and on Blackboard.

Textbook: I expect that you will acquire a copy of the textbook assigned for the course (see above). Please review chapters from the book *prior* to the lectures with which they are associated. Attend class prepared: reading the assignments in advance will help you follow the lectures.

Primary literature: I will assign primary literature associated with each of the topics we cover in the course. I expect you to read these papers before the class period during which we will discuss them.

Attendance: The attendance policy for Fall semester 2020 states: 1) that instructors must excuse absences for documented illness and 2) that if a student has a medical issue, there will be no penalty for missing class. Medical issues aside, I expect students to participate in all online lectures and to submit all assignments for grading on time. Because we will be going over assignments in class, I will not accept late assignments. If you miss class for some reason, I expect you to review the day's material. UofSC's attendance policy reads: "Absence from more than 10 percent of the scheduled class sessions, whether excused or unexcused, is excessive and the instructor may choose to exact a grade penalty for such absences." For more, see: <http://bulletin.sc.edu/content.php?catoid=97&navoid=2830>

Online materials: Following each day of class, I will post narrated lectures on Blackboard. My goal is for students to have three different ways of acquiring information for the course: 1) through live online lectures; 2) through reading the textbook and the assigned papers; and 3) through narrated lectures.

Assignments: There will be 25 quizzes and 2 short exams (a midterm and a final) associated with this course. The quizzes and exams will be mixes of multiple choice and short answer questions. A quiz will be made available on Blackboard following almost every lecture (see Course Schedule for details). Quizzes will be due at 3:30pm before the following class. I will drop your three lowest quiz scores from your final grade. The quizzes and exams will not have time limits (aside from the due dates) and they will be open-book and open-note. You are not to work with classmates on these assignments.

Participation: Please ask questions during lecture!

Extra Credit: There will be no opportunities for extra credit.

GRADING

Your grade for Comparative Physiology will be based on the following:

Quizzes	220 points	25 quizzes, 10 pts each, three lowest scores dropped
Exams	80 points	<u>2 exams, 40 pts each</u>
Total	300 points	

As an additional assignment graduate students will write a mock grant proposal describing an experiment relevant to the field of comparative physiology on a topic of their choice (50 points).

Grades are based on the accumulation of points. The number of points necessary to earn each letter grade is as follows:

Undergraduate Grading Scale (out of 300 points total)

A	≥ 270.0	C	210 – 224
B+	255 – 269	D+	195 – 209
B	240 – 254	D	180 – 194
C+	225 – 239	F	< 180

Graduate Grading Scale (out of 350 points total)

A	≥ 315.0	C	245 – 261
B+	297 – 314	D+	227 – 244
B	280 – 296	D	210 – 226
C+	262 – 279	F	< 210

The grades for assignments will not be curved. However, a uniform post-hoc adjustment may or may not be applied for each assignment to account for its difficulty. These adjustments will not result in anyone receiving a lower grade than they would have received otherwise. If you request a re-grade, please remember that your score can be adjusted upwards or downwards upon review.

The Final Exam will be due Tuesday, December 10th at 4:00 PM.

CLASSROOM POLICIES

- **Please show consideration for your classmates and instructor.** You will do so by:
 - Silencing your mobile devices before class starts.
 - Not engaging in distracting behaviors during class.
 - Asking questions relevant to the material being covered in class.
 - Not interrupting lecture to ask if you will be tested on a particular topic.
 - Beginning emails with a proper salutation. Starting an email without a salutation or a simple "Hey" is not appropriate.
 - Using proper grammar, spelling, punctuation, and capitalization when sending course-related messages. Text messaging language is not acceptable.

- **Every student has a role in maintaining the academic reputation of the University.** Students are to refrain from engaging in plagiarism, cheating, falsifying their work, and/or assisting other students in violating the Honor Code. Important components of the Honor Code include:
 - Faculty members are required to report potential violations of the Honor Code to the Office of Academic Integrity.
 - Lying is a violation of the Honor Code.
 - When a student is uncertain as to whether conduct would violate the Honor Code, it is the responsibility of the student to seek clarification from the appropriate faculty member.

- **Any deviation from the University of South Carolina Honor Code will result in a minimum of a zero score on the relevant assignment.** As determined by the Office of Academic Integrity, more severe disciplinary measures may be taken as well.

- **The use of course materials from previous semesters is not allowed in this course.** This is inclusive of the quizzes and exams. These aids are not available to all students within the course. Thus, their use undermines the fundamental principles of fairness that we all should follow and it disrupts your professor's ability to accurately evaluate your work. Any potential violations will be forwarded to the Office of Academic Integrity for review.

- **Course materials may not be redistributed to others in any manner.** These include, but are not limited to, electronic copies online. Video recordings are prohibited. Violations will be referred to the Office of Academic Integrity and may result in expulsion and/or legal action, even after the course is over. The only possible exceptions to these rules are those granted through the Office of Student Disability Services.

STATEMENTS

Diversity and Inclusion: The University is committed to a campus environment that is inclusive, safe, and respectful for all persons, and one that fully embraces the Carolinian Creed. To that end, all course activities will be conducted in an atmosphere of friendly participation and interaction among colleagues, recognizing and appreciating the unique experiences, background, and point of view each student brings. You are expected at all times to apply the highest academic standards to this course and to treat others with dignity and respect.

Diversity, Ethics, and the Carolinian Creed: This course works to foster a climate free of harassment and discrimination, and it values the contributions of all forms of diversity. The decision to enter university and pursue advanced study is a choice that entails commitment to personal ethics expressed in the Carolinian Creed (www.sa.sc.edu/creed): “I will discourage bigotry, while striving to learn from differences in people, ideas and opinions.” Likewise, the Student Code of Conduct (STAF 6.26 (<http://www.sc.edu/policies/ppm/staf626.pdf>)) stresses, “The University of South Carolina strives to maintain an educational community that fosters the development of students who are ethical, civil and responsible persons.”

Title IX and Gendered Pronouns: This course affirms equality and respect for all gendered identities and expressions. Please don't hesitate to correct me regarding your preferred gender pronoun and/or name if different from what is indicated on the official class roster. Likewise, I am committed to nurturing an environment free from discrimination and harassment. Consistent with Title IX policy, please be aware that I as a responsible employee am obligated to report information that you provide to me about a situation involving sexual harassment or assault.

Values: Two core values, inquiry and civility, govern our class. Inquiry demands that we all cultivate an open forum for exchange and substantiation of ideas. Strive to be creative, to take risks, and to challenge our conventional wisdom when you see the opportunity. Civility supports our inquiry by demanding ultimate respect for the voice, rights, and safety of others. Threatening or disruptive conduct may result in course and/or university dismissal.

Expectations of the Instructor: I am expected to facilitate learning, answer questions appropriately, be fair and objective in grading, provide timely and useful feedback on assignments and treat you as I would like to be treated.

Copyright/Fair Use Statement: I will cite and/or reference any materials that I use in this course that I do not create. You, as students, are expected to not distribute any of these materials, resources, quizzes, tests, homework assignments, etc. (whether graded or ungraded).