

SYLLABUS

BIOL 543: Comparative Physiology, Fall 2018

GENERAL INFORMATION

Schedule: Monday, Wednesday, and Friday; 9:40 AM – 10:30 AM; Coker Life Sciences 104

Instructor: Dr. Daniel I. Speiser

Office: CLS 606

Phone #: 803-777-6597

Email: speiser@mailbox.sc.edu

Note: Please contact me in person (after class or during office hours) or by email. If you send me an email between 9am and 5pm, I will do my best to respond the same day. Do not expect immediate responses to emails sent after normal work hours (i.e. later than 5pm).

Website: See Blackboard for course documents and announcements

Office Hours: Mondays and Wednesdays, 10:30 AM – 11:30 AM in my office in CLS 606. If a separate appointment is necessary, please contact me with a proposed time and the topic you want to discuss.

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 that has logs, exponents, and roots, but does NOT have graphing abilities or the ability to store text. Additional text may be assigned at the instructor's discretion – these assignments will be announced in class and via Blackboard.

Note: You will not be allowed to use a graphing calculator or any mobile devices during exams.

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: Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, contact the Office of Student Disability Services: 777-6142, TDD 777-6744, email sasds@mailbox.sc.edu, or stop by LeConte College Room 112A. All accommodations must be approved through the Office of Student Disability Services.

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, certain 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 specific biological questions or problems.

Comparative Physiology should establish a foundational knowledge for students continuing in a variety of professional careers, ranging from biological research to engineering to medicine. It is my hope that the course also helps students appreciate the importance of biodiversity, both for its own sake and for our own. Physiological systems covered in the course will include Digestion, Metabolism, Thermoregulation, Respiration, Circulation, Osmoregulation, Hormone Signaling, Reproduction, Neurons, Sensory Organs, and Muscle.

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.

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 quizzes and exams will not change. However, the timeline includes only a general schedule for the lecture topics and reading assignments. 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. Come to class prepared: reading the assignments in advance will help you follow the lectures.

Attendance: You are expected to be present at all lectures and exams and to submit all work for grading on time. If you do happen to miss class for some reason, I expect you to review the day's material with and get notes from your fellow students. For the record, here is USC's attendance policy: "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=66&navoid=1813>

Notes: All students are expected to attend class and to take their own notes. I will make lecture slides available on BlackBoard, but much of the material that will be covered in lecture will not appear on the slides. Instead, use the slides as a guide as you review your notes from class and the textbook.

Quizzes: You will take 10 quizzes on BlackBoard. I will post these quizzes after class on Wednesdays. They will be due on the Thursday nights (11:59 PM) before class on Fridays. We will review answers to the quizzes on Fridays.

Exams: The three exams for this course will include a combination of multiple choice questions, short answer questions, problem solving, and essay questions. Please bring a pencil and an appropriate calculator (see above) to class on exam days. Arrive for the exams on time. No one will be admitted to the exam after the first person has left the room. Exams will include material from class lectures, reading assignments, and quizzes. *Electronic communication devices and information storage devices must be turned off and inaccessible during the exam. Do not skip the exams. I will not offer make-up exams.*

Participation: I expect you to participate in class discussions, exercises, and activities. Also, please ask questions during lecture!

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

Blackboard: Please check Blackboard frequently for updates.

GRADING

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

100 points	Quizzes (10 points per quiz)
100 points	Midterm Exam # 1
100 points	Midterm Exam #2
<u>100 points</u>	<u>Final Exam (non-cumulative)</u>
400 points	Total Possible

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 (100 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 400 points total)

A	≥ 360.0	C	280 – 299
B+	340 – 359	D+	260 – 279
B	320 – 339	D	240 – 259
C+	300 – 319	F	< 240

Graduate Grading Scale (out of 500 points total)

A	≥ 450.0	C	350 – 374
B+	425 – 449	D+	325 – 349
B	400 – 424	D	300 – 324
C+	375 – 399	F	< 300

The grades for the exams will not be curved. However, a uniform post-hoc adjustment may *or may not* be applied for each exam 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 held Wednesday, December 13th, Wednesday at 9:00 AM. Make your travel plans accordingly. You may not take the final exam early or from off-campus.

Note: You must pass at least 2 of the 3 exams (= a score of 60 or higher) to receive a grade higher than a D+ in the course.

CLASSROOM POLICIES

- **If you must miss a mid-term exam or the final exam for a legitimate reason, you must seek permission from me in advance. Permission to miss exams will not be granted retroactively.**
- **Please show consideration for your classmates and instructor.** You will do so by:
 - Silencing your mobile devices before class starts.
 - Entering the room quietly if you are late to class.
 - Not engaging in distracting behaviors during class.
 - Asking questions relevant to the material being covered in class.
 - Not interrupting lecture to ask if a given topic will be on the exam.
- **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 quiz or exam.** As determined by the Office of Academic Integrity, more severe disciplinary measures may be taken as well.
- **The use of previous semester course materials is not allowed in this course.** This is inclusive of homework, projects, quizzes and/or tests. These aids are not available to all students within the course. Thus, their use undermines the fundamental principles of fairness and 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.