

BIOL 4446: ANIMAL PHYSIOLOGY

- Faculty:** Dr. David W. Garton
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- Description:** An introduction to the fundamentals of animal physiology, including basic principles of homeostasis at cellular, tissue and organismal levels. This course includes a survey of basic comparative physiological mechanisms, but focus is primarily on normal functions of mammalian tissue and organ systems.
- Textbook:** Randall, David, Warren Burggren and Kathleen French. *Eckart Animal Physiology: Mechanisms and Adaptations*. 5th Edition, W.H. Freeman.
- Lectures:** Attending lecture is **expected**. The lectures and readings are complementary and some material not in the text will be presented only in lecture (and *vice versa*). Lecture exams will be based on topics and material presented in class and in the assigned readings. As a courtesy to your fellow students, **please turn your cell phones, PDAs and laptops off while in lecture**.
- Readings:** Please complete each reading assignment as specified in the syllabus before coming to class.
- Grading:**
- | | |
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| In-class exams: | 40% |
| Final exam (comprehensive): | 30% |
| Outside class assignments: | 30% |

There will be four 'midterm exams' during the semester, each worth 10% of your final grade. Format will include multiple choice, short answer and problem sets, and these exams are designed to help you prepare for the comprehensive final exam worth 30% (wow) of your final grade. The other 30% of your final grade will be 'outside class assignments,' which will be varied and include short answer, problem sets, literature searches, and attending research seminars sponsored by the School of Biology. These assignments will be announced during the semester, and each will have a deadline for submission (electronic documents submitted by e-mail are acceptable). As a reminder, these are individual assignments and you are bound by Georgia Tech's Honor Code not to collaborate nor plagiarize. **Violation of the Honor Code can result in enforced withdrawal from the course with a failing grade.**

Absences: Students are expected to attend class. Missed exams or other assignments can be completed at a later date ('make-up') only with an excused absence. Excused absences include medical emergencies (with a signed note from the attending physician or health care provider), family emergencies requiring your presence, or an institute sanctioned event (e.g. athlete participating in a competition). **Make-up of missed exams or assignments will not be permitted for non-excused absences, and a grade of 0 (zero) will be entered for the missed exam or assignment.**

<i>Date</i>	<i>Topics</i>	<i>Chapters</i>
22 Aug	Introduction to Animal Physiology Central Themes & Concepts; Homeostasis	1
24 Aug	Review of Membranes, Osmosis & Ion Transport (Chapter 3 is assigned for review, you are responsible for the material in this chapter, too!)	4 (3)
29 Aug	Excitable Membranes: Nernst & Goldman Equations	5
31 Aug	Voltage-gated channels and the properties of action potentials	5
5 Sep	AP conduction within and between neurons	6
7 Sep	Neurotransmitters: Production & Recycling	6
12 Sep	Special Topic: Neuropharmacology	-
14 Sep	Intro to sensory systems: transduction	7
19 Sep	Midterm Exam 1 (SI)	1,3,4,5,6
21 Sep	Chemical & Mechanoreceptors (SI)	7
26 Sep	Visual systems (SI)	7
28 Sep	Brief overview of the nervous system	8
3 Oct	Integration of command & control: neuroendocrine pathways	9
5 Oct	Neuroendocrine, Part II	9
10 Oct	Midterm Exam 2	7,8,9
12 Oct	Intro to Muscle: Structure & Function	10
17 Oct	Fall Break-No Class	
19 Oct	Physiology of Muscle Contraction	10
24 Oct	Integration of Motor Units	10
26 Oct	Adjusting to the Environment: Ionic & Osmoregulation	14
31 Oct	Mammalian Kidney Function	14
2 Nov	Non-Mammalian Kidney Function: Weird Ways to Pee	14
7 Nov	Midterm Exam 3 (PA)	10,14
9 Nov	Circulation: Physiology of the Heart (PA)	12
14 Nov	Circulation: Physiology of the Distribution System (PA)	12
16 Nov	Circulation: Exchanges in Capillary Networks (PA)	12
21 Nov	Gas Exchange: Environmental Challenges & Solutions (PA)	13
23 Nov	Thanksgiving Holiday-No Class	
28 Nov	Physiology of Gases in Blood	13
30 Nov	Midterm Exam 4	12,13
5 Dec	Energy: Acquisition and Fate	15
7 Dec	Energy: Responding to Environmental Changes	17

COMPREHENSIVE FINAL EXAM
Wednesday, Dec 13 2:50-5:40 pm