

BI 434: Comparative Animal Physiology (CRN 31056)
Western Oregon University
Spring 2023

Contact Information

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114 DeVolder

Office Hours: M 10:00 – 11:30 a.m.

T 9:00 a.m. – 10:30 a.m.

Meeting times and location

MF 1:00 p.m. – 2:20 p.m.

Natural Sciences Building, Room 016

W 1:00 p.m. – 3:50 p.m.

Natural Sciences Building, Room 006

Course description

This course is an introduction to the basic concepts of animal physiology. We will address the function of cells, tissues, organs, and organ systems in relation to energy and metabolism, sensory perception, muscle movement, respiration, and circulation. We will discuss animal models used to study animal physiology and learn physiology experimental procedures. By the end of the course you should have a strong foundation that you can use as you pursue your own personal interests in the diverse field of vertebrate physiology.

Course Goals

1. Learn how specific animal systems function in order to understand the concept that physiological functions are often compartmentalized into different cells, tissues, organs, and systems, which have structures that support specialized activities.
2. Explore different physiological systems to understand how organ systems interact with each other and how an individual's physiological traits affect its interactions with other organisms and the physical environment.
3. Analyze and interpret experimental data to understand concepts of animal physiology.
- WOU Undergraduate Learning Outcome: Inquiry and analysis

Text (Optional): *Animal Physiology*, 5th ed. Hill, Cavanaugh, and Andersen. 2022.

The textbook is optional. Older editions will work for you, too, but the page numbers and figure numbers will be sometimes be different. A copy of the 4th edition is on reserve at the library.

Evaluation and Expectations

Exams

There will be two midterm exams (50 minutes each) and one final exam (110 minutes).

Approximately half of the final exam will cover new material and the other half will be cumulative.

The exams will cover lecture material and lab activities. The exams will consist primarily of multiple choice and short answer essay questions. The goal of the exams are to evaluate your understanding of the class material, your ability to explain concepts and ideas, and your ability to apply concepts and ideas to new problems.

ALL STUDENTS ARE EXPECTED TO TAKE THE EXAMS ON THE SCHEDULED DAYS. If you miss an exam or will be missing an exam, contact the instructor as soon as possible. If the absence is EXCUSED,

you will be able to make up the exam for the full points possible. However, only the following will be considered an excusable absence:

1. A university-related absence (i.e., game, concert tour, fieldtrip, etc.). You *must* contact me prior to the event for the absence to be excused.
2. A personal issue that is excused by the Student Success and Advising Office. Please complete a Student Absence Notification Form here: <http://www.wou.edu/advising/absence/>.

If the absence is UNEXCUSED, you will be able to make up the exam but you will receive a 10% penalty on the overall exam score for each day the exam is not completed. Once an exam is handed back, no make-up exams will be given.

Lab attendance

Lab attendance is required. You will have lab partners that are counting on you to attend lab. If you have an unexcused absence, you will not have the opportunity to make-up lab. If you cannot attend a lab meeting, please let me and your lab partners know in advance. If you let us know in advance that you will be missing a lab meeting, we may be able to work out a way for you to make-up the lab. **IF YOU MISS A LAB AND HOPE TO HAVE YOUR ABSENCE EXCUSED, YOU MUST COMPLETE A STUDENT ABSENCE NOTIFICATION FORM (<HTTP://WWW.WOU.EDU/ADVISING/ABSENCE/>).**

Lab assignments

You will have a lab assignment due at the end of lab each week. You will be collecting data with lab partner(s) which you will share, but all writing you do for this course should be your own.

Discussion

We currently have 3 discussions of primary literature scheduled. A week before the discussion, I will post the paper and discussion questions on the course Moodle site. You are expected to submit your answers to the discussion questions by 5 p.m. the evening before the discussion. I will grade your answers and return them to you at the beginning of class. Your discussion grade will be based on your preparation and participation in the paper discussions.

Grading

Midterm I	60	Letter grades (in percentage)	
Midterm II	60	A	93 – 100
Final Exam	120	A-	90 – 92
Discussion (15 pts each)	45	B+	87 – 89
Lab Exercises (20 pts. each)	<u>160</u>	B	83 – 86
	445	B-	80 – 82
		C+	77 – 79
		C	73 – 76
		C-	70 – 72
		D	60 – 69
		F	< 60

Canvas site

I will post lectures slides, class recordings, study guides, lab instructions, and course announcements on the class Canvas site. Do not mistake the on-line lecture slides and recordings to be adequate replacements for class attendance. You can't ask questions to the posted slides and you won't see anything presented on the overhead projector. It is your responsibility to visit the site on a regular basis to download materials and receive the needed information.

I will also occasionally post lecture videos that you need to watch before class and will work on related problem sets in class. I will give you at least 3 days advanced notice if you have a lecture video that you need to watch before class.

General Etiquette

Use of a computer for note-taking in class is fine, but should not be used for emailing, chatting, surfing, etc., during class. Recreational use of your computer in class is distracting to those around you. Similarly, cell phones should be off during class. If you are using a cell phone during lab, you are distracted from your work and are creating an unsafe working environment. If you cannot ignore your cell phone during lab, do not bring it to lab.

Academic Misconduct

Academic integrity is a responsibility of all students. The work you turn in is expected to be your own, and information from others is expected to be cited appropriately. Please review: www.wou.edu/student/residences/pdfs/the_code_of_student_responsibility.pdf
Students who commit acts of academic misconduct are subject to in-class penalties imposed by the instructor and to a hearing before Judicial Affairs with possibilities of additional penalties.

Additional resources**Disability Services**

WOU values diversity and inclusion; we are committed to fostering full participation for all students. Please notify your instructor if there are aspects of the instruction or design resulting in barriers to your participation.

Disability related accommodations are determined through the Office of Disability Services (ODS). If you, as a student, believe you may be eligible for disability related accommodations please contact ODS, they would be happy to work with you. ODS notifies students and faculty members of approved academic accommodations and coordinates implementation of accommodations.

Academic Programs Services Center (APSC) 405
503-838-8250 (voice)
<https://wou.edu/disabilityservices/>
ods@wou.edu

Student Health and Counseling Center

If you experience overwhelming academic stress, difficult life events, or feelings of anxiety or depression, I strongly encourage you to seek support. Remember that getting help is a

smart and courageous thing to do – for yourself, for those you care about, and for those who care about you.

- Student Health and Counseling Center (www.wou.edu/health). Counseling services are free for all WOU students taking at least 1 on-campus credit.
- WOU's Suicide Prevention and Mental Health Promotion program (www.wou.edu/mental-health).
- For life threatening situations, call 911 or Campus Public Safety (www.wou.edu/safety) at (503) 838-9000.

Additionally, if a faculty or staff member has concerns about your mental health, they may contact the WOU CARE Team (<https://wou.edu/student/care-team/care-team-information/>) and ask them to reach out to you. The CARE team specializes in helping students who are dealing with issues of bias, trauma, situations involving medical or psychological concerns, and campus emergency situations that directly affect the well-being of students and the campus community at large.

Library

Hamersly Library has a wealth of resources, services, and facilities available to bolster your success, regardless of your local or remote location. Do you need orientation, a full-fledged research consultation, or help between those extremes? Librarians, staff, and your student peers meet you online to provide personalized assistance. Physical and electronic collections of books, articles, and other media support WOU academic programs and students' recreational reading needs. In-library technology, such as a scanner, video & audio production rooms, and computers and printers, is supplemented by the equipment lending program; during the pandemic, we are focused on checking out computing equipment to facilitate online coursework. Print materials and computing equipment can be shipped to a home address or picked up at the library. See library.wou.edu/coronavirus for complete information.

WOU Student Success Specialist

If your faculty member at any point in the term is concerned about your academic progress and ability to succeed in the course, they may make a referral to Student Success and Advising through the Wolf Connection System (WCS). If a referral is created, an Academic Success Advisor from SSA will connect with you via email or telephone to discuss challenges you may be facing and your plan to overcome those obstacles and achieve success. This referral process is in place as a way to support you in this class and not a punishment. Anytime you want to discuss strategies for academic success, you may schedule an appointment with an Academic Success Advisor by calling 503-838-8428, emailing studentsuccess@wou.edu, or online by logging into the Portal, selecting WCS and selecting Get Advising.

Tentative Class Schedule

Date	Class meeting topics	Chapter (pp.)
Mon (Apr. 3)	Introduction	1 (3-32)
Wed	Lab: Introduction to Data Analysis Software	
Fri	Nutrition, digestion and absorption	6 (135-169)
Mon (Apr. 10)	Energy metabolism	7 (171-194)
Wed	Lab: Thermic effect of eating	
Fri	Aerobic and anaerobic metabolism	8 (196-220)
Mon (Apr. 17)	Energetics of aerobic activity	9 (221-238)
Wed	Lab: Effect of temperature on metabolism	
Fri	Temperature regulation	10 (239-293)
Mon (Apr. 24)	Primary literature discussion (Paper TBD)	
Wed	Lab: Effect of temperature on metabolism data analysis	
Fri	Exam I (Ch. 1, 6, 7-10)	
Mon (May 1)	Membrane potentials and action potentials	12 (313-345)
Wed	Lab: Action potentials	
Fri	Synapses and receptors	13 (347-378)
Mon (May 8)	Vestibular organs and photoreception	14 (387-394; 404-417)
Wed	Lab: Auditory and visual reflexes	
Fri	Neural control of movement	19 (530-550)
Mon (May 15)	Primary literature discussion (Paper TBD)	
Wed	Lab: Leech body wall contraction	
Fri	Exam II (Ch. 12, 13, 14 & 19)	
Mon (May 22)	Animal navigation	18 (511-497)
Wed	Lab: Animal navigation	
Fri	Oxygen and carbon dioxide	22 (602-614)
Mon (May 29)	Memorial Day—No Class	
Wed	Lab: Circulation and blood pressure	
Fri	Gas transport	24 (653-686)
Mon (June 5)	Mammalian Dive Reflex	26 (723-742)
Wed	Lab: Mammalian dive reflex	
Fri	Primary literature discussion (Paper TBD)	
Wed (June 14) Final Exam: 12:00 - 1:50 p.m.		