

BI 451: Invertebrate Zoology (CRN 31032)  
Western Oregon University  
Spring 2024

### Contact Information

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Office Hours: M 11:00 a.m. – 12:30 p.m.

T 1:30 p.m. – 3:00 p.m.

### Meeting times and location

MWF 10:00 a.m. – 10:50 a.m. Natural Sciences Building, Room 122

T 8:00 a.m. – 11:50 a.m. Natural Sciences Building, Room 006

Sa, May 11 7:30 a.m. – 4:00 p.m.

### Course description

This course is a systematic study of invertebrates, with a comparative approach to anatomy, physiology, behavior, life history and evolution. We will emphasize the relatedness of structure and function and focus on the adaptations of these animals to their environments. Observation of living invertebrates is emphasized in the lab.

### Course Goals

1. Describe and compare the body plans, specialized structures and behaviors among a broad range of invertebrates, focusing on the varied ways that invertebrates carry out their key functions
2. Describe and discuss the adaptations of invertebrates to the abiotic and biotic elements of their ecosystems, as well as their ecological roles and human impacts.
3. Engage in the practice of natural history by observing living invertebrates and documenting observations, discoveries and insights.  
- WOU Undergraduate Learning Outcome: Integrative Learning

### Text (Optional)

*Invertebrates*, 4<sup>th</sup> ed. Brusca, Giribet and Moore. 2023. The textbook is optional. Older editions will work, too. I'm using this for lecture preparation, but I didn't want to require you to purchase it when we'll cover less than half the text in our 10 week term. It's a great resource if you want to go more in-depth in invertebrates.

## Tentative Class Schedule

Date	Class meeting topics
Mon (Apr. 1)	Introduction
Tue	<b>No Lab Meeting</b>
Wed	Systematics and Phylogeny
Fri	Physiology
Mon (Apr. 8)	Development
Tue	<b>Lab:</b> Microscopy and Phylogenetic Analysis
Wed	Arthropoda I: <i>Acyrtospion pisum</i> (Protostomes, Ecdysozoans)
Fri	Arthropoda II: <i>Pacifastacus leniusculus</i> (Protostomes, Ecdysozoans)
Mon (Apr. 15)	Arthropoda III: <i>Myrmarachne formicaria</i> (Protostomes, Ecdysozoans)
Tue	<b>Lab:</b> Campus habitat observation and invertebrate collection
Wed	Nematoda: <i>Caenorhabditis elegans</i> (Protostomes, Ecdysozoans)
Fri	Tardigrada: <i>Milnesium tardigradum</i> (Protostomes, Ecdysozoans)
Mon (Apr. 22)	<b>Exam 1</b>
Tue	<b>Lab:</b> Field trip to riparian habitat
Wed	Echinodermata: <i>Florometra serratissima</i> (Deuterostomes)
Fri	Chordata: <i>Polycarpa aurata</i> (Deuterostomes)
Mon (Apr 29)	Porifera: <i>Xestospongia muta</i>
Tue	<b>Lab:</b> Collecting, observing, documenting
Wed	Ctenophora: <i>Beroe abyssicola</i>
Fri	Cnidaria: <i>Ptilosarcus gurneyi</i>
Mon (May 6)	Rotifera: <i>Philodina roseola</i> (Protostomes, Spiralia)
Tue	<b>No Lab Meeting</b>
Wed	<b>Exam 2</b>
Fri	Platyhelminthes: <i>Pseudoceros bifurcus</i> (Protostomes, Spiralia)
Sat	<b>Lab:</b> Intertidal Field Trip and Oregon Coast Aquarium (2 Labs)
Mon (May 13)	Mollusca I: <i>Argopecten irradians</i> (Protostomes, Spiralia)
Tue	<b>Lab:</b> Collecting, observing, documenting
Wed	Mollusca II: <i>Tritonia Diomedea</i> (Protostomes, Spiralia)
Fri	Mollusca III: <i>Sepia officinalis</i> (Protostomes, Spiralia)
Mon (May 20)	Annelida I: <i>Hirudo verbana</i> (Protostomes, Spiralia)
Tue	<b>Lab:</b> Collecting, observing, documenting
Wed	Annelida II: <i>Riftia pachyptila</i> (Protostomes, Spiralia)
Fri	<b>Exam 3</b>
Mon (May 27)	<b>Memorial Day—No Class</b>
Tue	<b>Lab:</b> Collecting, observing, documenting
Wed	Brachiopoda: <i>Terebratalia transversa</i> (Protostomes, Spiralia)
Fri	Bryozoa: <i>Pectinatella magnifica</i> (Protostomes, Spiralia)
Mon (June 3)	Determined by wheel of small phyla
Tue	<b>Lab:</b> Notebook presentations
Wed	Determined by wheel of small phyla
Fri	Determined by wheel of small phyla
<b>Mon (June 10)</b>	<b>Final Exam: 10:00 - 11:50 a.m.</b>

## Evaluation and Expectations

### Exams

There will be three 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 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

We have ten lab meetings—8 on Tuesdays and a double-lab meeting on Saturday, May 11. On May 11<sup>th</sup>, we will be going to the Oregon coast to observe animals in tidepools, then we will visit the Oregon Coast Aquarium. In order to earn an A in the class, you need to attend and actively participate in at least 8 lab meetings. In other words, if you can't attend the May 11<sup>th</sup> trip to the coast, you need to attend and participate in the other 8 lab meetings. If you do attend the trip to the coast, you can miss two other lab meetings.

The lab meetings are detailed in the schedule below. Your primary lab assignment will be your lab notebook. During the 10-week term, you will be expected to collect, observe, identify, draw or photograph, and document your observations for invertebrate animals.

If you cannot attend a lab meeting for an excused reason (see the Exam section above), you may be able to make-up the lab. **To have your absence excused, complete a Student Absence Notification Form (<http://www.wou.edu/advising/absence/>).**

## Grading

		<b>Points</b>	<b>Lab meeting attendance and participation</b>						
			<b>Earned</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>
Midterm I	60								
Midterm II	60								
Midterm III	60	439 (93%)	A	A-	B	C	D	F	
Final Exam	120	425 (90%)	A-	B+	B-	C-	D-		
<u>Lab Notebook</u>	<u>175</u>	411 (87%)	B+	B	C+	D+	F		
	475	392 (83%)	B	B-	C	D			
		378 (80%)	B-	C+	C-	D-			
		363 (77%)	C+	C	D+	F			
		344 (73%)	C	C-	D				
		330 (70%)	C-	D+	D-				
		316 (67%)	D+	D	F				
		297 (63%)	D	D-					
		283 (60%)	D-	F					
		<283 (<60%)	F						

## 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.

## 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](http://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](mailto: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](http://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](http://www.wou.edu/mental-health)).
- For life threatening situations, call 911 or Campus Public Safety ([www.wou.edu/safety](http://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](http://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](mailto:studentsuccess@wou.edu), or online by logging into the Portal, selecting WCS and selecting Get Advising.