

ZOO 4205C Invertebrate Biodiversity

Fall 2023

Lecture: T, TH 1230-1350 h, BSFS 102

Lab: TH 0930-1220 h, BSFS 102

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Coral reef off the southeastern coast of Florida

UCF catalog description: ZOO 4205C COS-BIOLOGY 4(4,8)

Invertebrate Biodiversity: PR: Complete all of the following. Earned a minimum grade of C in each of the following: BSC2010C - Biology I (4) BSC2011C - Biology II (4) PCB3044 - Principles of Ecology (3) or C.I. Comparative biology of invertebrates, emphasizing morphology, evolution, ecology and conservation biology. Fall

Course outline: In lecture, we will address the natural history of all multicellular invertebrates, from sponges and corals to sea urchins and sea squirts. Lab will be devoted to as much hands-on experience as possible. The goal is to provide you with the background and experience necessary to begin independent or graduate-level research, to step into a job as an invertebrate zoologist, and to better understand the wild world of invertebrates.

Course objectives:

- ✓ To provide a solid background in invertebrate biology
- ✓ To understand the relationship between form and function, habit and habitat
- ✓ To provide hands-on experiences using the scientific method

Required textbook: [Richard C. Brusca, Gonzalo Giribet, and Wendy Moore \(2022\). *Invertebrates*, 4th edition. Oxford University Press, ISBN: 9780197554418 \(paperback\), 1104 pages.](#) Previous editions also are acceptable.

Attendance and Participation: Are mandatory in all labs and strongly encouraged in lecture. Lab and lecture will begin promptly at their designated times so don't be late.

If you need help: Web Courses is the required form of communication. Questions about the lab should be directed to Mr. Dal Pos; for everything else, contact Dr. Fauth. Your message must be written in a professional manner and include your full name as it appears in the class roster. We will try to answer questions within two class days unless the answer already is in the syllabus, was answered in class, posted on Web Courses, or can be determined using readily available resources or common sense.

Schedule

Date	Topic	Reading ¹
22 AUG	Course organization & the scientific method	Syllabus
24 AUG	Lab: The power of observations – complete on your own	
	Lecture: From observation to hypothesis testing	
29 AUG	Introduction to the invertebrates	Chapters 1 & 2
31 AUG	Lab & lecture combined: Exam 1, Pre-Test	
05 SEP	Bauplans and animal development	Chapters 3 & 4
07 SEP	Lab & lecture combined: Curating our invertebrate collection	Preserving and Specimen Handling: Insects and other Invertebrates
12 SEP	Porifera & Placozoa	Ch. 5 + p. 167
14 SEP	Lab & lecture combined: Curating our invertebrate collection	
19 SEP	Cnidaria & Ctenophora	Chapters 6 & 7
21 SEP	Lab: Porifera, Placozoa, Cnidaria & Ctenophora	Chapters 8 - 12
	Lecture: Xenacoelomorpha, the Gnathifera & other enigmatic phyla	
26 SEP	Molluscs Part 1	Chapter 13
28 SEP	Lab and lecture combined: Course Field Project	
03 OCT	Molluscs Part 2	
05 OCT	Lab and lecture combined: Exam 2	
10 OCT	Lecture (begins at 0930 h this day): Nemertea & Annelida	Chapters 14 & 15
12 OCT	Lecture: Lophophorates & Rousphozoa	Chapters 16 & 17
	Lab (begins at 1100 h this day): Mollusca, Annelida, the lophophorates & Rousphozoa	
17 OCT	Scalidophora & Nematoida	Chapters 18 & 19
19 OCT	Lab & lecture combined: Course Field Project	
24 OCT		Ch. 19
26 OCT	Lab & lecture combined: Course Field Project (inside)	

¹ Readings correspond with the 4th edition of *Invertebrates*

31 OCT	Tardigrades, onychophorans & the arthropod bauplan	Ch. 20
02 NOV	Lab: Annelids, molluscs & other phyla	Ch. 21
	Lecture: Trilobites & crustaceans	
07 NOV	Hexapoda	Ch. 22
09 NOV	Lecture (begins at 0930 h this day): Myriapoda & Chelicerata	Chapters 23 & 24
	Lab (begins at 1100 h this day): Arthropods	
14 NOV	Lecture: Echinoderms Part I	Ch. 26
16 NOV	Lab & lecture combined: Course Field Project	
21 NOV	Special topic – Sea Creatures in Glass	
23 NOV	Thanksgiving Holiday – no lab or class	
28 NOV	Echinoderms Part II	
30 NOV	Lecture: Hemichordates & the invertebrate chordates	Chapters 25 & 27
	Lab: The deuterostomes	
07 DEC	Exam 3, Final Exam: 10:00 AM – noon	

Method(s) for submitting lab assignments: We generally will use hard copies or file uploads for lab assignments. Instructions for each assignment will be provided in class and on Webcourses.

Syllabus: The schedule, topics, activities, and class rules are tentative, and the professor reserves the right to alter them as needed. Students will be notified of changes during class and/or via Web Courses.

Office hours: We will be available via Zoom during the “home office” hours shown below. If you need assistance with a lab, please meet with Mr. Dal Pos. For everything else, please contact Dr. Fauth.

Dr. John E. Fauth	M 1300 – 1500 h or by appointment at another mutually convenient time. Please confirm meetings in advance because academic advisees, graduate students, etc., also meet with me during office hours.
Mr. Davide Dal Pos	W 1000 – 1200 h

“Home office” hours are subject to change to accommodate other responsibilities. Changes will be announced in class and/or on Web Courses. We’re also available during down time of labs.

Grading: Your numerical grade will be determined by your work on the three exams, the course project, and lab assignments, as shown below:

Exam 1, Pre-Test	5% (graded portion only)
Exam 2, Midterm Exam	20%
Exam 3, Final Exam	25%
Course project	25%
Lab assignments ² (weighted equally, except lab curation carries double weight)	25%

All exams are cumulative. You must work independently of others and neither give nor receive assistance or communicate with others during them. Exams will include diverse questions on all aspects of the course, including lecture material, classroom discussions, field work, labs, and other activities. Exams will be challenging and will require you to use the scientific method and to apply concepts to new situations. To encourage good study habits and discourage memorize/regurgitate/forget behavior, we will politely decline to answer questions one class day before each exam. Late assignments will not be accepted and will receive a grade of zero. That's how science works: if your grant proposal is late, it won't be accepted, and you will not be considered for funding.

I use competency-based grading in all my courses: to earn an A, one must demonstrate the abilities expected of an excellent, undergraduate invertebrate zoologist. **If the entire class demonstrates such abilities, I will be absolutely delighted to give everyone an A! The easiest way for everyone to earn an A is to help each other - peer learning and altruism benefit everyone.** Exam and lab grades will be recorded in Web Courses; we also will post scoring summaries there. Do not pay any attention to the summary columns labeled "Assignments" and "Total" in Webcourses. Your final numerical score will be calculated exactly as stated at the beginning of this section, minus 5 point deductions for each instance of being late for class or lab, or other disruptive, discourteous or unsafe behavior. Leave all weapons securely encased at home or in your personal vehicle; there's no need for them in class, the lab, or during field work.

At the end of the semester, numerical scores will be converted into letter grades as shown here:

92.6 – 100.0	A		70.0 – 77.4	C
89.5 – 92.5	A-		68.5 – 69.5	C-
87.5 – 89.4	B+		67.5 – 68.4	D+
82.6 – 87.4	B		62.6 – 67.4	D
79.5 – 82.5	B-		59.5 – 62.5	D-
77.5 – 79.4	C+		59.4 or less	F

Make-up exams and other assignments: All exams are cumulative, so if an acceptable absence forces you to miss Exam 1 or 2, its weight will be added to the final exam. Similarly, if an

² You must be present and participating in all labs to receive a nonzero score for this component of your grade. A non-excused absence or failure to actively participate will result in a score of zero for this entire component of your course grade.

acceptable absence forces you to miss the submission deadline for a lab assignment, its weight will be distributed among the remaining lab assignments. Acceptable absences are major illness, serious family emergencies, special curricular or professional requirements (e.g., attending a scientific meeting), court-imposed legal obligations, military obligations, severe weather conditions, religious holidays, and participation in official university-sponsored activities such as intercollegiate athletics. Acceptable absences must be documented, in advance if possible. If you miss an exam for other than an acceptable absence your score will be a zero. Likewise for lab assignments – you must be present and contributing and submit work on time to receive credit. Late submissions will receive a grade of zero – that’s how science works in the real world. Note that skipping a lab will result in a grade of zero being recorded for your entire lab score; i.e., 25% of your course grade will be a zero.

Academic integrity: Students should familiarize themselves with UCF’s Rules of Conduct at <https://scai.sdes.ucf.edu/student-rules-of-conduct/>. According to Section 1, “Academic Misconduct,” students are prohibited from engaging in

1. Unauthorized assistance: Using or attempting to use unauthorized materials, information or study aids in any academic exercise unless specifically authorized by the instructor of record. The unauthorized possession of examination or course-related material also constitutes cheating.
2. Communication to another through written, visual, electronic, or oral means: The presentation of material which has not been studied or learned, but rather was obtained through someone else’s efforts and used as part of an examination, course assignment, or project.
3. Commercial Use of Academic Material: Selling of course material to another person, student, and/or uploading course material to a third-party vendor without authorization or without the express written permission of the university and the instructor. Course materials include but are not limited to class notes, Instructor’s PowerPoints, course syllabi, tests, quizzes, labs, instruction sheets, homework, study guides, handouts, etc.
4. Falsifying or misrepresenting the student’s own academic work.
5. Plagiarism: Using or appropriating another’s work without any indication of the source, thereby attempting to convey the impression that such work is the student’s own.
6. Multiple Submissions: Submitting the same academic work for credit more than once without the express written permission of the instructor.
7. Helping another violate academic behavior standards.
8. Soliciting assistance with academic coursework and/or degree requirements.

Responses to academic dishonesty, plagiarism, or cheating: students should also familiarize themselves with the procedures for academic misconduct in UCF’s student handbook, *The Golden Rule* <<https://goldenrule.sdes.ucf.edu/>>. UCF faculty members have a responsibility for students’ education and the value of a UCF degree, and so seek to prevent unethical behavior and respond to academic misconduct when necessary. Penalties for violating rules, policies, and instructions within this course can range from a zero on the exercise to an “F” letter grade in the course. In addition, an Academic Misconduct report could be filed with the Office of Student Conduct, which could lead to disciplinary warning, disciplinary probation, or deferred suspension or separation

from the University through suspension, dismissal, or expulsion with the addition of a “Z” designation on one’s transcript.

Being found in violation of academic conduct standards could result in a student having to disclose such behavior on a graduate school application, being removed from a leadership position within a student organization, the recipient of scholarships, participation in University activities such as study abroad, internships, etc.

Let’s avoid all of this by demonstrating values of honesty, trust, and integrity. No grade is worth compromising your integrity and moving your moral compass. Stay true to doing the right thing: take the zero, not a shortcut.

Withdrawal: The deadline for withdrawal without penalty is published by UCF. You must decide whether to remain in the course by that time. I do not give grades of Incomplete and the Biology Department does not permit NC (No Credit).

Field work: This class will retrieve Blue Vane pollinator traps and record habitat data in upland pine communities within a local wilderness area. You must dress appropriately for hot, humid Florida weather and bring drinking water and snacks. Wear loose-fitting, breathable protective clothing, including boots, long pants with a belt, calf-high socks, a long-sleeved shirt, and a hat. Before we begin field work, review the symptoms and treatments for heat-related illnesses, as recommended by the US Centers for Disease Control and Prevention: <https://www.cdc.gov/disasters/extremeheat/warning.html>. We will hike off-trail through dense shrubs, saw palmetto and greenbrier (*Smilax* sp.); your best defense against these plants is wearing long pants and closed-toed shoes. If you are allergic to pollen, plants, insect bites, or insect stings, I strongly recommend that you carry the necessary first aid (e.g., rescue inhaler, EpiPen) at all times. We may encounter ticks and chiggers; your best defense against these arthropods is tucking in your clothing and spraying susceptible areas with insect repellent. Going for a swim, a long soak in a hot tub or bath, or a soapy shower as soon as possible after field work reduces chigger bites. Venomous reptiles, including pigmy rattlesnakes and eastern diamondback rattlesnakes, inhabit this property. No one is allowed to handle or disturb any snake; instead, bring them to the attention of Dr. Fauth. Lightning is another potential hazard. If you hear thunder and the storm is advancing toward us on radar, return immediately to the UCF vehicles.

Course Accessibility Statement: The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. Students with disabilities who need access to course content due to course design limitations should contact the professor as soon as possible. Students should also connect with Student Accessibility Services (SAS) <http://sas.sdes.ucf.edu/> (Ferrell Commons 185, sas@ucf.edu, phone 407-823-2371). For students connected with SAS, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential course access and accommodations that might be necessary and reasonable. Determining reasonable access and accommodations requires consideration of the course design, course learning objectives and the individual academic and course barriers experienced by the student. Further conversation with SAS, faculty and the student may be warranted to ensure an accessible course experience.

Campus Safety Statement: Emergencies on campus are rare, but if one should arise during class, everyone needs to work together. Students should be aware of their surroundings and familiar with some basic safety and security concepts. In case of an emergency, dial 911 for assistance – even when doing field work!

Every UCF classroom contains an emergency procedure guide posted on a wall near the door. Students should make a note of the guide’s physical location and review the online version at http://emergency.ucf.edu/emergency_guide.html. Students should know the evacuation routes from each of their classrooms and have a plan for finding safety in case of an emergency.

If there is a medical emergency during class, students may need to access a first-aid kit or AED (Automated External Defibrillator). To learn where those are located, see <https://ehs.ucf.edu/automated-external-defibrillator-aed-locations>.

To stay informed about emergency situations, students can sign up to receive UCF text alerts by going to <https://my.ucf.edu> and logging in. Click on “Student Self Service” located on the left side of the screen in the toolbar, scroll down to the blue “Personal Information” heading on the Student Center screen, click on “UCF Alert”, fill out the information, including e-mail address, cell phone number, and cell phone provider, click “Apply” to save the changes, and then click “OK.”

Students with special needs related to emergency situations should speak with their instructors outside of class.

To learn about how to manage an active-shooter situation on campus or elsewhere, consider viewing this video (<https://youtu.be/NIKYajEx4pk>).

Make-Up Assignments for Authorized University Events or Co-curricular Activities: Students who represent the university in an authorized event or activity (for example, student-athletes) and who are unable to meet a course deadline due to a conflict with that event must provide the instructor with documentation in advance to arrange a make-up. No penalty will be applied. For more information, see the UCF policy at <https://policies.ucf.edu/documents/4-401.pdf>

Deployed Active Duty Military Students: Students who are deployed active duty military and/or National Guard personnel and require accommodation should contact their instructors as soon as possible after the semester begins and/or after they receive notification of deployment to make related arrangements.

Religious observances: Students must notify their instructor in advance if they intend to miss class for a religious observance. For more information, see the UCF policy at <http://regulations.ucf.edu/chapter5/documents/5.020ReligiousObservancesFINALJan19.pdf>

Title IX Policy: Title IX prohibits sex discrimination, including sexual misconduct, sexual violence, sexual harassment, and retaliation. If you or someone you know has been harassed or assaulted, you can find resources available to support the victim, including confidential resources

and information concerning reporting options at <https://letsbeclear.ucf.edu> and <http://cares.sdes.ucf.edu/>.

In-Class Recording Statement: Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording classroom activities other than class lectures, including but not limited to lab sessions, student presentations (whether individually or part of a group), class discussion (except when incidental to and incorporated within a class lecture), clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations is prohibited. Recordings may not be used as a substitute for class participation and class attendance, and may not be published or shared without the written consent of Dr. Fauth. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct as described in the Golden Rule.

Three keys to success:

- Pay attention
- Work hard
- Have fun!



Invertebrates used as college mascots