

Marine Adaptations – FAS6154

Sections-6940, 6941, 6965

1 Course Overview

Course description:

- This course will focus on the responses of species and habitats to stressors encountered in the marine environment. We will first examine the physiological responses to salinity, hypoxia, ocean acidification, thermal stress, pollutants, nitrogen stress, UV radiation, and noise. Then we will explore these physiological stressors as drivers of marine ecological processes. Examples will be drawn from a wide array of marine habitats including estuarine, coastal, polar, coral reef, benthic, rocky intertidal, marsh, and pelagic. Finally, we will discuss societal, economic, and management implications.
- 3 Credits
- Fall 2022
- Format: online, asynchronous
- <http://elearning.ufl.edu/>

Course Prerequisites: BSC 2010 and 2011 or equivalent; courses in animal physiology and ecology are recommended.

Instructor: Dr. Shirley Baker

- Please use the Canvas message/Inbox feature for fastest response.
- Office hours: virtual (Zoom) office hours, Tuesdays and Thursdays 1pm, or as arranged
- Phone: 352-273-3627, Text: 352-213-3808

Teaching Assistant: Coleson Wrege

- Please use the Canvas message/Inbox feature for fastest response.
- Office hours: available by email or phone; office visits available by appointment.

Textbook(s) and/or readings: There is no required text for the course. Online readings will be provided for each learning topic.

2 Learning Outcomes

By the end of this course, each student will be able to:

- Describe the impacts of stressors on the physiology and ecology of marine phyla and ecosystems.
- Compare physiological mechanisms of stress adaptation in a variety of marine phyla.
- Analyze the effects of stressors and physiological responses in shaping ecological patterns observed in marine ecosystems.
- Evaluate and synthesize primary literature in the discipline.

3 Course Logistics

Students may access lectures, assignments, readings, and supporting materials through the course Canvas site as they become available.

Technology Requirements:

- A computer or mobile device with high-speed internet connection.
- A webcam, headset and/or microphone, and speakers.
- Latest version of web browser. Canvas supports only the two most recent versions of any given browser.
- Installation of proctoring software may be required and will be provided if so.

Synchronous online sessions may be recorded. By sharing your video, screen, or audio during any synchronous online class sessions, you are consenting to being recorded for the benefit of students who cannot attend live as well as for class review during the current semester. If you have special circumstances or concerns about privacy, it is your responsibility to discuss it with your instructor.

3.1 Description of Assessments & Activities

Introduction: 1 @ 2 points, due in Canvas. Please introduce yourself in the Canvas Discussion set up for that purpose. Read and comment on your peer's introductions.

Quizzes: 14 @ 5 points each, due in Canvas on Tuesdays. Quizzes will be administered once a week through Canvas (see schedule). Quizzes will consist of multiple choice, short answer, and short essays. Questions will be "open notes" but will require critical thinking, integration, and application of interdisciplinary concepts. Quizzes will open and close on the dates noted; once a quiz is closed, I will not reopen it.

"Journal Club" We will read and critique primary literature related to course topics on a weekly basis. Graduate students are expected to serve as role models for undergraduates. Consider contributing by summarizing and synthesizing the papers, asking follow-up questions, and providing additional background materials about the topic, authors, methods, terms, etc. "Journal Club" will consist of:

Perusall: 13 @ 5 points each, due online on Wednesdays. I will post scientific papers Perusall. You will be expected to read the entire paper and annotate content, write comments/questions that elicit responses, and upvote other student comments/questions.

"Choose Your Own Adventure" Project We will collaborate on a semester-long assignment which will culminate in an annotated collection. In addition, graduate students will be expected to create a science communication product. You will choose an organism and/or a stressor to focus on. Topics must be approved by me. For graduate students, there are three parts to this assignment:

"20% Project" Participation: 13 @ 2 points each, in TEAMS. You should expect to spend approximately 20% of our weekly class time (20 minutes) gathering, curating, and sharing resources (articles, websites, videos, etc) related to your "Choose Your Own Adventure"

Projects. You will maintain your resources and notes in TEAMS, where you can also share with your peers and myself throughout the week. Graduate students are expected to serve as role models in this endeavor.

Annotated Collection: 1 @ 20 points each, due in Canvas in Week 15. The “20% Project” will require that you gather, select, and organize resources related to your topic. You will find more resources than you can use, some may not be relevant, and some may not be scientifically sound. From the resources you have gathered, you will select the best and annotate them – write short descriptions of why these are good resources, what you learned from them, and how they fit with what else you have learned. Your final Word document (with citations and links to resources) will be submitted in Canvas.

Scientific Communication Product: 1 @ 20 points each, due in Canvas in Week 15. Using your gathered resources, you will develop a brief scientific communication product to convey what you learned about your topic to a particular audience. Your medium could be an infographic, podcast, video, magazine or news article, blog, map, interview, exhibit, comic, lesson plan, children’s book, TED talk, demonstration, briefing, training, community presentation, etc. Your medium, intended audience, and grading expectations/rubric must be approved by me.

End-of-Semester Participation: 3 @ 2 points each in Weeks 15 and 16. Scientific Communication Products of both in-class and distance graduate students will be shared with the entire class (TEAMS or Canvas). You are expected to view and comment on peer projects.

3.2 Grades & Grading Scale

Introduction, 1 @ 2 points	2 points
Quizzes, 14 @ 5 points each	70 points
Perusall, 13 @ 5 points each	65 points
20% Project Participation, 13 @ 2 points each	26 points
Annotated Collection, 1 @ 20 points	20 points
Scientific Communication Product	20 points
End-of-Semester Participation, 3 @ 2 points	6 points
TOTAL	209 points

Grading Scale (%)	
A	100% to 94%
A-	93.99% to 90%
B+	89.99% to 87%
B	86.99% to 84%
B-	83.99% to 80%
C+	79.99% to 77%
C	76.99% to 74%
C-	73.99% to 70%
D+	69.99% to 67%
D	66.99% to 64%
D-	63.99% to 61%
E	60.99% to 0%

For information on current UF policies for assigning grade points, see Ugrad <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>
 Grad <https://catalog.ufl.edu/graduate/regulations/#text>

4 Learning Content

T = Tuesday, W = Wednesday, R= Thursday			
Week	Date	Topic	Assignment Due
1	25 August	Introduction and expectations	
2	30 August	Effects of salinity as a stressor	T: Quiz T: 20% Project W: Perusall R: Introduction
3	6 September	Effects of changing salinity on ecology	T: Quiz T: 20% Project W: Perusall
4	13 September	Respiratory responses to environmental hypoxia	T: Quiz T: 20% Project W: Perusall
5	20 September	Ecological consequences of hypoxia	T: Quiz T: 20% Project W: Perusall
6	27 September	Physiological effects of ocean acidification	T: Quiz T: 20% Project W: Perusall
7	4 October	Ecological effects of ocean acidification	T: Quiz T: 20% Project W: Perusall
8	11 October	Physiological responses to thermal stress	T: Quiz T: 20% Project W: Perusall
9	18 October	Effects of temperature stress on ecological processes	T: Quiz T: 20% Project W: Perusall
10	25 October	Chemical pollutants in the marine environment and physiological impacts	T: Quiz T: 20% Project W: Perusall R: Halloween Costume Extra Credit
11	1 November	Nitrogen stress in the marine environment	T: Quiz T: 20% Project W: Perusall
12	8 November	Physiological responses to, and ecological impacts of, UV radiation	T: Quiz T: 20% Project W: Perusall
13	15 November	Physiological effects and ecological impacts of underwater noise	T: Quiz T: 20% Project W: Perusall

14	22 November Thanksgiving	Managing stressors in the marine environment	T: Quiz T: 20% Project
15	29 November	End-of-Semester Participation	T: Quiz T: Annotated Collection T: Scientific Communication Product W: Perusall
16	6 December	End-of-Semester Participation	

4.1 Readings

Representative examples:

Craig, J.J. 2012. Aggregation on the edge: effects of hypoxia avoidance on the spatial distribution of brown shrimp and demersal fishes in the Northern Gulf of Mexico. *Marine Ecological Progress Series* 445: 75-95.

Decelle, J., Anderson, A., & Hourdez, S. 2010. Morphological adaptations to chronic hypoxia in deep-sea decapod crustaceans from hydrothermal vents and cold seeps. *Marine Biology* 157 : 1259-1269.

Long, W.C., Swiney, K.M., Harris, C. Page, H.N. , & Foy, R.J. 2013. Effects of ocean acidification on juvenile red king crab (*Paralithodes camtschaticus*) and tenner crab (*Chionoecetes bairdi*) growth, condition, calcification, and survival. *PLoS ONE* 8: e60959.

Rodrigues, A.P., Oliveira, P.C., Guilhermino, L. & Guimaraes, L. 2012. Effects of salinity stress on neurotransmission, energy metabolism, and anti-oxidant biomarkers of *Carcinus maenus* from two estuaries of the NW Iberian Peninsula. *Marine Biology* 159: 2061-2071.

Shone, BR., Flessa, K.W., Dettman, D.L. & Goodwin, D.H. 2003. Upstream dams and downstream clams: growth rates of bivalve mollusks unveil impact of river management on estuarine ecosystems (Colorado River Delta, Mexico). *Estuarine, Coastal and Shelf Science* 58: 715-726.

5 Policies and Requirements

This course plan and syllabus are subject to change in response to student and instructor needs. Any changes will be clearly communicated in advance through Canvas.

5.1 Late Submissions & Make-up Requests

It is the responsibility of the student to access on-line lectures, readings, quizzes, and exams and to maintain satisfactory progress in the course. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Computer or other hardware failures, except failure of the UF e-Learning system, will not excuse students for missing assignments. Any late submissions due to technical issues MUST be accompanied

by the ticket number received from the Helpdesk when the problem was reported to them. The ticket number will document the time and date of the problem. You **MUST** e-mail your instructor within 24 hours of the technical difficulty if you wish to request consideration.

For computer, software compatibility, or access problems call the HELP DESK phone number—352-392-HELP = 352- 392-4357 (option 2).

5.2 Communication Courtesy and Professionalism

Just as in any professional environment, meaningful and constructive dialogue is expected in this class and requires a degree of mutual respect, willingness to listen, and tolerance of opposing points of view. **Respect for individual differences and alternative viewpoints will be maintained in this class at all times.** All members of the class are expected to follow rules of common courtesy, decency, and civility in all interactions. Failure to do so will not be tolerated and may result in loss of participation points and/or referral to the Dean of Students' Office.

5.3 Semester Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning.

At approximately the mid-point of the semester, the School of Forest, Fisheries, & Geomatics Sciences will request anonymous feedback on student satisfaction on various aspects of this course. These surveys will be sent out through Canvas and are not required but encouraged. This is not the UF Faculty Evaluation!

At the end of the semester, students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

5.4 Academic Honesty Policy

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."*

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct or appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic

integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated.

Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see:

<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

5.5 Inclusive Learning Environment

This course embraces the University of Florida's Non-Discrimination Policy, which reads,

The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act.

If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see the instructor or refer to the Office of Multicultural & Diversity Affairs website:

<http://multicultural.ufl.edu>.

5.6 Services for Students with Disabilities:

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. 0001 Reid Hall, 352-392-8565, disability.ufl.edu

5.7 Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

6 Campus Helping Resources

For issues with technical difficulties for e-learning in Canvas, please post your question to the Technical Help Discussion in your course, or contact the UF Help Desk at:

- Learning-support@ufl.edu | (352) 392-HELP - select option 2 | <http://elearning.ufl.edu>
- Library Help Desk support <http://cms.uflib.ufl.edu/ask>
- SFFGS Academic Hub <https://ufl.instructure.com/courses/303721>

6.1 Student Life, Wellness, and Counseling Help

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- Counseling and Wellness resources <http://www.counseling.ufl.edu/cwc/>
- U Matter, We Care <http://www.umatter.ufl.edu/>
- Career Connections Center <http://career.ufl.edu/>
- Other resources are available at <http://www.distance.ufl.edu/getting-help> for online students.

6.2 Student Complaint Process

The School of Forest, Fisheries, & Geomatics Sciences cares about your experience and we will make every effort to address course concerns. We request that our online students complete a course satisfaction survey each semester, which is a time for you to voice your thoughts on how your course is being delivered. You can also [submit feedback anytime](#).

If you have a more urgent concern, your first point of contact should be the Academic Coordinator or the Graduate/Undergraduate Coordinator for the program offering the course. You may also submit a complaint directly to UF administration:

- <https://distance.ufl.edu/getting-help/>
- <https://registrar.ufl.edu/complaint.html>