ESR 480 & 580: Coastal Marine Ecology

Monday, Wednesday 12:10-1:59 pm

Instructor

Dr. Catherine de Rivera, derivera@pdx.edu, 503 725 9798
Office hours (https://pdx.zoom.us/j/81527563257): M 11:25-11:55; W 2-3, or by appointment.

Course Overview

Welcome to Coastal Marine Ecology! This course will introduce you to hypotheses concerning the relationships between marine species and their environment, intra and interspecific interactions, and key factors structuring marine communities. A combination of lectures, discussion of relevant scientific literature, and a virtual field trip focused on the rocky intertidal community of Oregon will help you integrate knowledge of how biological and physical environments determine the distributions, abundances, processes, and diversity of coastal marine life.

Course Objectives

After taking this course, students should be able to:

- Understand and apply ecological concepts about marine coastal habitats;
- Evaluate and explain the key factors structuring marine communities and associated theories;
- Discuss relevant literature and incorporate scientific papers into independent learning;
- Develop a hypothesis to address an ecological marine pattern or process and design an experiment to test it;
- communicate informed positions on current marine environmental issues;
- 480: Work collaboratively and respectfully with a peer to develop an approach to research a marine ecology topic;
- 580: Provide leadership about marine topics such as helping with discussion about marine ecology primary research papers and critiquing an experimental design.

Approximate Schedule

Wk	Date	Topic	Assignment(s) due by class
1	M 3/29	Intro, marine biodiversity & primary prod.	
1	W 3/31	Marine physical processes	skim Ch 2; 15: 340-4; **Proposal topic**
2	M 4/5	Larval ecology; exp design 1: Summer T	Ch 4
2	W 4/7	Hypotheses & experimental design	**hypothesis**
3	M 4/12	Rocky intertidal; exp design 2: Maya H	Ch 9
3	W 4/14	More rocky intertidal; exp design 3: Paul H	
4	M 4/19	Coral reefs	Ch 13; Article 1 + questions
4	W 4/21	Kelp forests; review	Ch 14
5	M 4/26	Exam	
5	W 4/28	Mangrove forests	skim Ch 3; Article 2 + questions
6	M 5/3	Soft sediment; exp design 4: Katie Baker	Ch 10 + p 348;
6	W 5/5	Estuaries	Article 3 + questions
7	M 5/10	Seagrass; exp design 5: Geoff S	Ch 12,
7	W 5/12	Salt marsh	Ch 11
8	M 5/17	Climate change	Ch 19
8	W 5/19	proposal & presentation work time; rehearsals	**Proposal Rough draft**
9	M 5/24	Student presentations (6)	**Return peer reviews**
9	W 5/26	Student presentations (6)	
10	M 5/31	**Memorial Day – no class**	
10	W 6/2	Student presentations (3); Review	**Proposal due 6/4 11:59 pm**
F	R 6/10	**Second exam** (12:30-14:20)	

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Grading

Component	480	580
In class work & associated asynchronous prep work	16%	16%
Grant Proposal (topic, hypothesis, proposal and peer review)	30%	32%
Oral presentation on proposal topic	10%	12%
Quizzes (12, each worth 0.5%)	6%	6%
First Exam	19%	15%
Second Exam	19%	15%
Leadership: Paper Discussions; Present experimental design	n/a	4%

- Each class session, other than during student presentations, you will have to turn in one or two assignments of short discussion questions &/or about the readings, and once based on a virtual fieldtrip. Please work with your breakout group(s) and the whole class to answer the questions. Please turn in your own copy to d2l, but your answers can be the same as those of your group members. These are graded as you did it (full credit) or didn't (none) or maybe you did part of it (half credit).
- The main project for the term is to prepare or, for undergraduates, co-prepare a grant proposal for a coastal marine ecology research project. Start immediately preparing this proposal. Your rough draft will be peer reviewed. I will grade the final drafts using the **rubric** (see d2l). Proposals should be 4-6 pp 1.5 spacing for 480 students, 5-8 pp 1.5 spaced for 580, plus a References Cited section**. If** you would strongly prefer to work on a skill other than a grant proposal, discuss your idea for an alternative marine ecology project with me.
- Presentations on your proposals should be 12 min + 3 min for questions (**see rubric** on d2l) and should be shared via Zoom screen share.
- There are 12 short quizzes (3-5 questions) to take on d2l, one for every lecture. Each quiz is worth 0.5% of your grade and you may take each twice then keep the better grade (access via the content module for the week or via Activities – Quizzes)
- Exams will cover all material discussed in class (lectures, readings, student presentations). They will be available via d2l (under Quizzes). The format includes both the automatically graded short answer questions (multiple choice/True-False…) much like the quizzes and also written answer thinking and synthesis questions that are like the in-class questions (and which I'll hand grade after everyone has taken the test). You can take the exams for any 100 min block during the day they are due (plus 10 min grace period to finish any question(s) you are still working on).
- 580 students only: Leadership: Experimental design - present your own design or a design you've encountered in a paper, highlighting strengths and weaknesses and how well it allows the researcher to address the question. Please try to select a well-designed experiment or survey. This should help other students learn different experimental approaches and their strengths and weaknesses. (see **rubric; sign up for one of** 4/7, 4/12, 4/14, 5/3, or 5/10). We will all read and discuss several articles throughout the term; please take a leadership role in discussing the articles.

Readings:

Suggested Text (grad students especially, you really should read this!): Marine Community Ecology and Conservation. Bertness MD, Bruno JF, Silliman BR & Stachowicz JJ. (eds). 2015. Sinauer Associates, Inc, Sunderland, MA.

The required articles are listed below; their numbers correspond to the number on the class & assignment schedule on page 1 of this syllabus. These required readings are available at the PSU library: library.pdx.edu. Be sure to sign in so you can access them. You can download the papers from this site

from a home computer, or from a campus computer (e.g., general access computer labs). For your convenience, they're also on d2l.

Article #

1. Albright et al. 2016. Reversal of ocean acidification enhances net coral reef calcification. *Nature* 531:362-377
2. Martin, C., Almahasheer, H, and Duarte, C.M. 2019. Mangrove forests as traps for marine litter. *Environmental Pollution* 247:499-508
3. Toniello, G., Lepofsky, D., Lertzman-Lepofsky, G., Salomon, A.K. and Rowell, K., 2019. 11,500 years of human–clam relationships provide long-term context for intertidal management in the Salish Sea, British Columbia. *Proceedings of the National Academy of Sciences*, *116*(44): 22106-22114

Land Acknowledgement: I respectfully acknowledge the land where Portland State University is located is the unceded territory and ancestral lands of the Multnomah, Kathlamet, Clackamas, Tumwater, Watlala bands of the Chinook, the Tualatin Kalapuya, and many other Indigenous nations of the Columbia River. I'd like to pay respects to their elders past and present and recognize that we are here because of the sacrifices forced upon the ancestors of this place. In remembering these communities, we honor their legacy, their lives, and their descendants.

D2L: To access d2l, you'll need an ODIN account. If you don't have one, go to: https://www.account.pdx.edu/, call (503 725 4357), or email (help@pdx.edu) the office of information technologies help desk. D2L houses all the content and information for the course. Everything you will need in and for class will be accessible via the Content menu. The content will be organized by week. You may also want to check on the grades you've earned on assignments anytime throughout the term via the grade tab, and you can access the assignments either through the content module for the week or directly via the assignments menu. If you are new to D2L, you can find tutorials, once you log into https://d2l.pdx.edu/ , by clicking Student Help from the login page. There is also an introductory D2L course, which you can find by searching D2L for the title: Online and Remote Readiness.

Course Policies

**** Conduct*:** We are to follow the 'highest ethical standards of professional' and student behavior. Check out the Student Code of Conduct, to which you are bound: http://www.pdx.edu/dos/codeofconduct

- If you have not already done so, please go through the on-line training for creating a safe, respectful campus: https://d2l.pdx.edu/d2l/home/425907
- Practice classroom courtesy and help create a positive learning environment for everyone:
  - Treat each other with respect (listen, don't interrupt, be humble)
  - Care about your own and each other's learning
  - No harassment or discrimination
  - Participate: join the class, ask questions, do your work.

*Prepare and deliver work on time. I have suggested due dates for all the assignments. I encourage you to keep up with the assignments and regularly advance your grant proposal. However, I will not impose any late penalties as long as 1) exams are completed the week they are assigned, ideally the day they are assigned, so I can return them to the class in a timely fashion; 2) the proposals are turned in at the latest by 6/4, and 3) everything else is turned in by 6/10 so I can grade it in time. If you turn in your work late, there's a good chance I won't get it back to you quickly (it's much faster and easier to grade all of an assignment at once).

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Resources & Services:

Computing needs: The library has laptops and google chromebooks for check out for the quarter, and will deliver the equipment to your home.

Software needs: PSU has made many software licenses available to the PSU community for use on personal machines to facilitate remote learning and research through the virtual computer lab. PSU students, faculty, and staff can also access Microsoft Office suite on their personal machines.

ESM webpage: all sorts of info on what the department is doing: http://www.pdx.edu/esm/

Consult the Purdue OWL re: ***plagiarism*** and other writing issues: https://owl.english.purdue.edu/owl/resource/589/01/

Library Research Tutorials: http://guides.library.pdx.edu/home/howto and http://guides.library.pdx.edu/biology

DRC: If you are a student with a documented disability and are registered with the Disability Resource Center, please contact me so that we can arrange whatever academic accommodations you need. Please arrange with the DRC ahead of tests and send me a prompt to send them the test if required.

Resources for students can be found at: http://my.pdx.edu/students/resources-across-campus including Writing Center: for class assignments, resumes... http://www.writingcenter.pdx.edu/ Cramer rm 188; Free Tutoring...: http://www.pdx.edu/tutoring/ PSU library rm 245; Career Services: https://www.pdx.edu/careers/what-can-i-do-degree-environmental-studiesenvironmental-sciences and https://www.pdx.edu/careers/; Multicultural Centers: https://www.pdx.edu/dmss/multicultural-student-center ; https://www.pdx.edu/dmss/native-american-student-community-center ; https://www.pdx.edu/dmss/la-casa-latina-student-center ; LSAMP (Louise Stokes Alliance for Minority Participation in STEM) 103 Epler Hall http://www.pdx.edu/lsamp/home; Queer Resource Center: www.pdx.edu/queer; Food pantry: https://sites.google.com/a/pdx.edu/psufoodpantry/; Office of Veterans Services https://www.pdx.edu/veterans/veterans-services

You may report any incident of discrimination or discriminatory harassment, including sexual harassment, to either the Office of Equity and Compliance or the Office of the Dean of Student Life. Please be aware that as a faculty member, I have the responsibility to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination.