

Biology 4010/6417: Marine Ecology

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Meeting Times: Lectures: Tu Th at 9:35 – 10:55

Course Description and Goals:

Biology 4010/6417 is an interdisciplinary introduction to marine ecology. We will focus on a broad array of systems, including the open ocean, coastal habitats, and coral reefs. Students enrolled in Biology 6417 will be responsible for a class presentation in addition to the other course requirements.

Lectures:

The lectures will cover all of the materials central to the course. The schedule included in this syllabus is a working model and may be modified as the term progresses. Class attendance is *not* optional – each meeting will include time for interactive discussion of course materials and a portion of the overall class grade will be based on participation in those discussions. All assigned readings should be done before class.

Readings and Reference Materials:

We will read and discuss a number of selected papers from the recent literature, as well as a variety of web-based materials.

Quizzes:

We will give unannounced pop quizzes to see if you've done the assigned readings before coming to class. These won't be difficult; if you've done the reading you should do fine. We will drop your lowest quiz grade but will not give makeup quizzes, so if you miss class or come in late, you're out of luck.

Exams:

Two midterms and the final exam. The exams will consist primarily of questions that require short (1-2 paragraphs) written answers. These will be designed to test your understanding and ability to articulate concepts as well as facts.

Paper:

A short (4-5 page) paper on a topic of current interest in marine ecology.

Grading:

Course grades will be based on the following combination of items:

Midterm exams:	40%
Course participation:	10%
Quizzes:	10%
Paper (+ presentation for 6417 students):	15%
Final exam:	30%

Note that the total number of points is 105, which means that we've built 5 points of extra credit into this basic scheme.

Honor Code:

All students are expected to abide by the Academic Honor Code, which can be viewed online at http://www.deanofstudents.gatech.edu/integrity/policies/honor_code.php

Wk	Day	Date	Lecture Topics (tentative)	Notes
1	Tu	9 Jan	Introduction to the course History of ocean science The ocean as a physical environment	
	Th	11 Jan	Doing Science: Importance of multiple working hypotheses	
2	Tu	16 Jan	Physical setting: currents and tides	
	Th	18 Jan	Phytoplankton survey	
3	Tu	23 Jan	Phytoplankton: Light and nutrients	
	Th	25 Jan	Primary production: spatial & temporal patterns	
4	Tu	30 Jan	Zooplankton survey	1 paragraph prospectus of presentation/paper due
	Th	1 Feb	Zooplankton feeding strategies	
5	Tu	6 Feb	Zooplankton vertical migration	
	Th	8 Feb	Zooplankton production	
6	Tu	13 Feb	Plankton and ocean biogeochemistry	
	Th	15 Feb	Benthic systems	
7	Tu	20 Feb	Tides and the intertidal	
	Th	22 Feb	Midterm Exam	
8	Tu	27 Feb	Doing Science: Experimental design, rigor, and the dangers of pseudoreplication	
	Th	1 Mar	Ocean sex: The ecology of external fertilization	Drop deadline: 2 March
9	Tu	6 Mar	Supply-side ecology #1 – Why larvae? Why complex life cycles in the sea?	
	Th	8 Mar	Community level effects of larval recruitment/ecology	
10	Tu	13 Mar	Genetic structure in the sea – consequences for evolution and for Marine Protected Areas	
	Th	15 Mar	Competition (apparent and otherwise) and the structure of marine communities	
11	Tu	20 Mar	Spring Break	
	Th	22 Mar	Spring Break	

Wk	Day	Date	Lecture Topics (tentative)	Notes
12	Tu	27 Mar	Evolutionary responses to competition	Start 6417 presentations
	Th	29 Mar	Predation and the structure of marine communities	
13	Tu	3 Apr	Evolutionary responses to consumers	
	Th	5 Apr	Chemical warfare in the sea (the evolutionary arms-race)	
14	Tu	10 Apr	The smell of death: Trait-mediated interactions	
	Th	12 Apr	Natural disturbance and the dynamics of marine communities	
15	Tu	17 Apr	Midterm	
	Th	19 Apr	Anthropogenic disturbance and the dynamics (collapse?) of marine ecosystems	Papers due
16	Tu	24 Apr	Climate change and marine communities	
	Th	26 Apr	Wrap up	
F	M	30 Apr	Start of Final Exams	
	Th	3 May	Final Exam (0800 – 1050)	
	S	5 May	End of Final Exams	
