

Biology 384 Seminar in Marine Ecology Spring 2007

Lecture Time: Thursdays 9:00am - 11:30am

Location: HS G39

Instructor: Dr. Cynthia Kicklighter

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Required Text:

Levinton, J.S. 2001. *Marine Biology: Function, Biodiversity, Ecology*, 2nd Ed. Oxford University Press.

Course Description: This course will examine the ecological aspects of the various marine habitats, giving students a feel for the diversity, complexity, structure, and function of this environment. Students will present chapters from the text, articles from primary literature, and a review of a chosen topic, which will be the basis of a lively and entertaining class discussion.

Presentations, Part I: For the first three-quarters of the course, each week, four students will give presentations. One or two students will give an overview of the reading from the text and the other two or three students will each choose a paper from the primary literature that is relevant to the topic of the week. There will be 35 minutes for each presentation (including discussion time for primary literature presentations 10-15 min.). Time-limits will be strictly enforced so that we stay on schedule. Presentations may utilize powerpoint, the chalk board, video, audio, interpretive dance, etc. Basically, you are free to use most any means possible to present your topic, as long as you get your point across **effectively**. Students presenting papers from the primary literature must provide a pdf to all members of the class by 10am the Monday before the presentation. If a pdf is not available, a hard copy of the article must be given to me by 10am the Monday before the presentation and I will copy it and make it available to everyone.

Text presentations: Present the material in the text as a professor would give a class lecture (*or perhaps more interesting and effectively...*). Feel free to supplement the information with reputable (i.e., primary literature, information from other textbooks) information. You may incorporate class activities or discussion if you wish, but this is not required. Total presentation time should be 30-35 min.

Primary literature presentations: Tell why you chose your paper and how it relates to the topic of the week. Present the main points of the paper and lead a class discussion. If your paper is long, you should hit the most intriguing points of the paper and do not get bogged down in details, especially in the methods. Total presentation time should be 35 minutes, including 10-15 min. discussion.

Presentations, Part II: The last part of the course will be devoted to presentations on a topic of your choosing, concerning a specific habitat, phenomenon, relationship, etc. in the field of marine ecology. You will choose a topic to review for the class in a 35 minute talk. Your talk may include the physical, chemical, geological, physiological, etc. components of the system, but you must *focus* on the ecological aspects. Include, for example, what the current areas of research focused on, what are the unanswered questions, why your topic is important/exciting/interesting.

While you will likely use multiple papers from the primary literature to reference for you talk; try not to give specific examples from all of them—it is usually better to focus on one or two exciting papers.

You may either come up with a topic on your own (*this requires my approval*) or choose a topic from the list I have provided. We will discuss topics in class on **March 15** to ensure that more than one person does not choose the same topic.

On the day of your presentation, you must provide the class with an abstract of your talk and the list of the literature you consulted.

Presentation Grading: I will assess all presentations (text, primary literature, chosen topic) for clarity, organization, ability to answer questions, and knowledge and understanding of the topics.

Class Participation: All class members are required to read the assigned text readings and articles and actively participate in class discussion. *Participation in discussion is an important component of your final grade.*

Attendance: Regular attendance is expected and is to your advantage, as participation in class discussions is required.

Cell Phones: Please make sure you either turn off or silence your phone before entering class. Phone calls during class will not be tolerated. 5% will be deducted from your grade each time your phone rings.

Web Resources: You may use the internet to access academic library databases (as demonstrated by Randy Smith on our first day of class). Google Scholar (www.scholar.google.com) is also an acceptable internet search engine to utilize. You may not use any other internet resources (*including Wikipedia*) to search for information on your topics because there is no way to verify whether the information is accurate.

Academic Honor Code: I expect you to abide by the Academic Honor Code, as presented in the Goucher College Academic Catalogue. Individuals failing to abide by the Honor Code will be referred to the Academic Honor Board.

Grades:

Text and primary literature presentations: 60% (3 x 20% each)
 Part II presentation: 25%
 Part II presentation abstract & literature list: 5%
 Class participation: 10% (0% for virtually silent, 10% for regular and reasonable contributions)

<u>Date</u>	<u>Topic</u>	<u>Reading</u>	<u>Presentations</u>
Feb. 1	Intro to the course and to marine environments; 10:30 electronic database training in library		
Feb. 8	Phytoplankton and primary productivity	p. 153-155, 201-218	1 text, 2 primary lit
Feb. 15	Zooplankton	p. 151-153, 155-165	1 text, 3 primary lit
Feb. 22	Nekton: Cephalopods, fishes	p. 168-179	1 text, 3 primary lit
Mar. 1	Nekton: Mammals, birds, reptiles	P 180-196	1 text, 3 primary lit
Mar. 8	Larval dispersal	p. 117-132	1 text, 3 primary lit
Mar. 15	Estuaries: Salt marsh, mangroves	p. 334-344	1 text, 3 primary lit
Mar. 22	SPRING BREAK – NO CLASS		
Mar. 29	Intertidal areas	p. 309-334	2 text (1 person p. 309-321, 1 person p. 321-334), 2 primary lit
Apr. 5	Sea grasses, kelp forests	p. 348-355	1 text, 3 primary lit
Apr. 12	Rocky reefs, coral reefs	p. 356-379	2 text (1 person rocky reefs, 1 person coral reefs), 2 primary lit
Apr. 19	Hydrothermal vents/methane seeps	p. 403-406, TBD	2 text, 2 primary lit
Apr. 26	Presentations		
May 3	Presentations		
May 10	Presentations		

Suggested topics for Part II Presentations:

Virioplankton: the importance of viruses in the sea
 Modes of communication in the sea: chemicals, sound, vision/light (choose one)
 Predation and escape strategies among copepods
 Anti-predator defenses in larvae
 Ecology of sea birds from a particular region or habitat (Antarctic, salt marsh, beaches, etc.)
 Effects of nutria, geese, and swans on Chesapeake marshes and submerged aquatic vegetation
 Ecology of a particular marine mammal (e.g., polar bears and global climate change, marine mammal impacts on foodwebs, etc.)
 Sex in the sea—strategies, difficulties, adaptations

Functions and use of bioluminescence in marine species
Diel vertical migration
Deep sea fish ecology
Ecology of seamounts
Ecology of whale falls
Hydrothermal vents—community structure and colonization of new vents
Ecology of hydrothermal vents versus methane seeps

Aspects of coral reef ecology:

Consumer-prey interactions and the use of secondary metabolites as chemical defenses
Ecology and evolution of cleaning fish and shrimps
Grassbeds and their role in the reef system
Mangroves and their role in the reef system
Impacts of global climate change
Sex change in fishes
Overfishing
Eutrophication

The functional importance of and strategies for restoration of:

Oyster reefs
Submerged grass beds (submerged aquatic vegetation, SAV)

Environmental issues and controversies:

Overfishing—problems, solutions?
Impact of trawling on seabed ecology
Red tides—causes, impacts
Anoxia in Chesapeake Bay—causes, impacts, solutions
Invasive species (e.g., *Phragmites*, green crab *Caulerpa taxifolia*, etc.)