

FISHERIES AND WILDLIFE SCIENCES

Marine Ecology

CATALOG DESCRIPTION

Marine organism, biological, ecological, chemical and physical processes of marine ecosystems in open sea, coastal and benthic environments, research methods and models in marine ecosystem simulation; fisheries in a dynamic ecosystem; human interference and conservation.

Pre: Biol 2804 or Geol 3034 or equivalent.

II (3H, 3C)

MEETING TIMES

Tuesday and Thursday 9:30-10:45AM; Cheatham Hall 132

INSTRUCTOR

Yan Jiao 110 Cheatham Hall, 231-5749, yjiao@vt.edu

Office hours: Friday afternoon 2:00-4:00PM

LEARNING OBJECTIVES

Upon completion of the course, students will be able to:

- 1) describe the marine environment.
- 2) discuss the chemical and physical processes in the ocean.
- 3) demonstrate how chemical, physical and biological characteristics influence distribution and abundance of marine organisms.
- 4) describe marine organisms and their biogeography and be able to interpret them in an ecological and evolutionary context.
- 5) explain and discuss marine production processes and food webs.
- 6) analyze the mechanism of the highly productive fisheries and their dynamics.
- 7) discuss human influences and conservation needs in marine systems.

REQUIRED TEXTBOOK

Levinton, J.S. 2001. Marine Biology: Function, Biodiversity, Ecology. Oxford University Press.

EVALUATION

Final grades will be based on:

- Exams 1, 2 (15%+15%)
- Class participation (10%)
- Final exam (40%)
- ^{*1}Project plan (15%) + presentation (5%) (20% total)
- ^{*2}Graduate student comprehensive literature review or a guest lecture (20%)

^{*1}Students will be self-organized into groups. Each group will have 2 to 3 students. Students in each group will work together to give a 15-minute presentation (10 minutes talk + 5 minutes question) on an **instructor-approved** topic, and write a short (2-3 pages) of project plan to support it. The project needs to be turned in prior to the talk. Example topics:

A review of the physical and biological characteristics of a small ecosystem of choice

A review of the community ecology of an ecosystem of choice

A review of fish, bird, marine mammal or other marine organism ecology and/or the environmental influence

A review of methods in the analysis of biodiversity

Climate changes versus anthropogenic influence

Single-species management versus multi-species, ecosystem management

Marine protected areas versus open access

Guidance is attached at the end of the syllabus.

^{*2}if the number of the graduate students is less than 3, graduate students will be required to give a guest lecture; if the number of the graduate student is more than 3, they are required to write a comprehensive literature review and discussion on an instructor-approved topic which relates to the contents of this course. Final grades for graduate students will be scaled from 120% to 100%.

Grading

Grading will be assigned as described in the Undergraduate Catalog. Final grades will include a “+” and “-.” We feel that a “C” indicates adequate performance and that a “B” or an “A” indicate “good” and “superior” work. Your grades are determined independently and you will not be competing against other students for the “curve.” Grades will be assigned according to a curve no stricter than the following schedule:

Letter Grade	% of Total Points	Your grade will be determined by your performance on the assessments described in the above section.
A	>93	
A-	90-92.9	
B+	87-89.9	
B	83-86.9	
B-	80-82.9	
C+	77-77.9	
C	73-76.9	
C-	70-72.9	
D+	67-69.9	
D	63-66.9	
D-	60-62.9	
F	<60	

DISABILITY STATEMENT:

“The university makes reasonable accommodations to meet the needs of students with disabilities in the university setting. In doing so, a variety of supplemental services are offered to help offset the functional disadvantage of a disability and help increase students’ educational opportunities.”

Students desiring particular accommodations or assistance should contact the instructors. We are happy to learn of and discuss ways in which we can improve the learning environment for students.

HONOR CODE STATEMENT:

“The Virginia Tech Honor Code embodies a spirit of mutual trust and intellectual honesty that is central to the very nature of the university, and represents the highest possible expression of shared values among the members of the university community. The Honor Code is the University policy which expressly forbids the following academic violations:

1. Cheating -- Cheating includes the actual giving or receiving of any unauthorized aid or assistance or the actual giving or receiving of any unfair advantage on any form of academic work, or attempts thereof.
2. Plagiarism -- Plagiarism includes the copying of the language, structure, ideas and/or thoughts of another and passing off same as one's own, original work, or attempts thereof.
3. Falsification -- Falsification includes the statement of any untruth, either verbally or in writing, with respect to any circumstances relevant to one's academic work, or attempts thereof.

Therefore, the student body at Virginia Tech will not tolerate any violation of the Honor Code. All students, upon admission to this University, have pledged to abide by the Honor Code. Any student found by the appropriate forum within the Honor System to have violated the Honor Code shall be deemed guilty as charged.”

I encourage students to work together when studying for class and in reviewing drafts of assignments. The work that you hand in for a grade should be your own. I will report any suspected honor code violations to the Honor System Office. If you have any questions about what is or is not appropriate behavior, please contact me immediately. Cheating, plagiarism, and falsification are completely at odds with the educational process.

ABSENCE POLICY:

Students are expected to attend each class. The grade of any test missed due to an excused absence will be replaced by the final exam grade. No make-up tests will be given.

CHANGES TO SYLLABUS:

The instructor reserves the right to make changes to the syllabus during the course. Any necessary changes will be announced in class and posted on the course website.

Productivity patterns and marine food webs and their variability	03/19	Ch10	
6. Processes of the seabed, from the shelf to the deep sea	03/24	Ch16	
<i>Exam 2</i>	03/26		
7. Ecosystem diversity			
Intertidal and Subtidal (Rocky shores, sandy shores, muddy shores)	03/31-	Ch14- 15	Steele 1998;
Estuaries, salt marshes, mangrove forests	04/09	Others to be announced	Murawski 2000
Sea grass beds, kelp forests, rocky forests			
Coral reef ecology			
Deep ocean ecology			
8. Marine biodiversity, anthropogenic influences and conservation			
Biodiversity	04/14	Ch17	Pauly et al. 1998;
Conservation, marine invasion, marine protected area and mariculture	04/16	Ch17	Ward and Myers 2005;
Fisheries, human impacts on fisheries and fish habits	04/21	Ch18	Sanchirico 2000
Marine pollution	04/23	Ch19	
9. Climate ocean oscillation, changes in marine ecosystems, and implications to fisheries	04/28		Forrester 1997; Ware and Thomson 1991;
			Werner et al 1996; Beamish et al. 2000;
			Glanze1992; Tegner et al. 1997; Zhang et al. 2000 (select 2 to read)
<i>Final project plan due 4/28 and presentations 4/30 or 5/5</i>	04/30-05/05		
<i>Final Exam</i>	05/12		10:05AM-12:05PM Cheatham Hall 132

*1: Readings are recommended but are not required.

