

SOUTHEAST MISSOURI STATE UNIVERSITY

Department of Biology

BI 434/634

Marine Evolutionary Ecology

New: Fall 2011

I. Catalog Description and Credit Hours

Integration of evolutionary and ecological processes that govern community structure and function in the marine environment. Human impacts on the marine environment. Three lectures. (3)

II. Prerequisite: BI 154, BI 332, and BI 348.

III. Purposes or Objectives of Course:

Students will be able to:

- A) Demonstrate an understanding of marine ecological principles and concepts.
- B) Apply marine ecological principles to explain structure and function of marine communities.
- C) Apply marine ecological principles to explain the evolution of marine organisms.
- D) Relate the relevance of marine ecology to current scientific, social, and economic issues.

IV. Expectations of Students

- A) Attend all lectures and complete all assignments; Contribute meaningfully to class discussions.
- B) Critically evaluate the current marine ecological and evolutionary literature.
- C) Prepare and present a detailed report on a specific marine ecological or evolutionary problem.
- D) Take two one-hour examinations and the final exam.
- E) Graduate students must complete and present an individual project.

V. Course Content and Outline

TOPIC	PERIODS
Introduction to the Marine Environment	3
Water Properties and Oceanography	
Ecosystem Structure and Function	
Larval Ecology	
Marine Ecosystem Overview	
Marine Primary Productivity	4
Primary Production	
Ecosystem Models	
Plankton Communities	
Oceanic Nekton	2
Environmental Adaptations	
Ecology and Food Webs	
Deep-Sea Biology	3
The Deep-Sea Environment	
Benthic Community Ecology	
Midwater Community Ecology	
Subtidal Communities	4
The Subtidal Environment	
Rocky and Kelp Communities	
Sea Grass Communities	
Polar Communities	
Intertidal Communities	4
The Intertidal Environment	
Rocky Shores	
Sandy Shores	
Muddy Shores	
Meiofauna	1
Estuaries	4
The Estuarine Environment	
Environmental Adaptations	
Estuarine Productivity	
Salt Marshes	
Tropical Communities	4
Coral Reefs	
Mangrove Forests	
Humans Impacts	4
Fisheries	
Mariculture	
Pollution and Climate Change	
Critical Analysis of Current Primary Literature	4
Student Presentations of Marine Ecological or Evolutionary Problems	6
Two one-hour exams	2
TOTAL	45

VI. Textbook(s) and/or Other Required Materials or Equipment:

- A) Required Text: Nybakken, James W. and Mark D. Bertness. *Marine Biology: An Ecological Approach*, 6th ed., Pearson Benjamin Cummings, 2005, or comparable up-to-date text.
- B) In-class handouts

VII. Basis for Student Evaluation

Undergraduate		Graduate	
Exams and Quizzes	40%	Exams and Quizzes	40%
Critical Analyses	25%	Critical Analyses	20%
Presentation & Report	25%	Presentation & Report	20%
Other Assignments	10%	Other Assignments	5%
		Individual Project	15%

The weight of evaluation criteria and the nature of the group, class, or independent projects may vary at the discretion of the instructor and will be indicated at the beginning of each semester.

VIII. Grading Scale

Undergraduate		Graduate	
90.00% - 100%	= A	90.00% - 100%	= A
80.00% - 89.99%	= B	80.00% - 89.99%	= B
70.00% - 79.99%	= C	70.00% - 79.99%	= C
60.00% - 69.99%	= D	≤ 69.99%	= F
≤ 59.99%	= F		

The instructor may adjust downward the lower boundary of each grade level. The lower boundary will never be adjusted upward.

IX. Academic Policy Statement:

Students will be expected to abide by the University Policy for Academic Honesty regarding plagiarism and academic honesty. Refer to:
<http://www6.semo.edu/judaffairs/code.html>

X. Student with Disabilities Statement:

If a student has a special need addressed by the Americans with Disabilities Act (ADA) and requires materials in an alternative format, please notify the instructor at the beginning of the course. Reasonable efforts will be made to accommodate special needs.