Ecology of Marine Organisms (BIOL 601/EVSS 622) - Spring 2020

INSTRUCTOR: Craig Plante, Ph.D.

TIMES AND LOCATIONS: Lecture: GML #202, M, W9:00-11:00 AM
Lab: GML #101, M (1:00-4:00) or W 2:00-5:00 PM

COURSE FORMAT: lecture, discussion and lab

INSTRUCTIONAL OBJECTIVES AND STUDENT LEARNING OUTCOMES:

One definition of *ecology* is "the study of the abundance and distribution of organisms." In this course we will explore the physical and the biological features and interactions that determine these abundances and distributions in marine environments. Our investigation of the ecology of marine organisms will include microbes, "plants" (including algae), invertebrate and vertebrate animals.

SLOs:

- demonstrate strong foundation of knowledge about ocean environment and basic terminology of marine ecology
- display understanding of foundational ecological concepts
- acquire facility with (marine) field ecological methodologies and data analysis
- analyze and report on student-acquired ecological data

TEXTS: Gotelli, NJ 2008. *A Primer of Ecology, 4th ed.*
Bertness, MD et al. 2014. *Marine Community Ecology & Conservation*

Additional useful references:
Pechenik, JA 2001. A Short Guide to Writing about Biology, 4th ed. Longman, New York.
Bertness, MD 1999. The Ecology of Atlantic Shorelines. Sinauer, Sunderland.
Kaiser, MJ et al. 2006. Marine Ecology: Processes, Systems, and Impacts. Oxford, NY.

GRADE DETERMINATION:

Research success in science (including marine ecology) is largely a function of one's ability to 1) synthesize existing knowledge and identify new problems and approaches, 2) "do" science, 3) effectively communicate the results of scientific research, and 4) make insightful contributions during group discussions (meetings, panels, etc.). This course is designed to foster these abilities.

Distribution of points:

2 exams	45 pts
discussion/participation	25 pts
laboratory write-ups	30 pts
	100 pts

Exams: Two exams, a mid-term and final, will count for 20 and 25% of your grade, resp. The final exam will be cumulative. I will attempt to highlight the most important

principles through lecture and lab. You are, however, responsible for all material in assigned readings.

Lab write-ups: Class research projects (5 or 6) will be written up in a lab report/mini-paper format. Separate instructions will be provided for each project. These will usually be written up by two-student teams.

Discussion: I anticipate a few class periods in which we will spend a portion of time discussing assigned readings. Fifteen percent of your grade will be determined by these discussions and your participation (both quality and quantity) in all lectures and labs. Each of you will also either lead one of these discussions or present a ~30 minute lecture (on some marine or estuarine habitat). This will account for 10% of your final grade.

Grading Scale:

A: 90 +	B+: 85-89	B: 80-84
C+: 75-79	C: 70-74	F: 0-69 failing

ATTENDANCE POLICY Daily roll will not be taken. However, you are strongly encouraged to attend all lectures and labs, and inform instructor in advance if you will miss a class. In particular, data to be collected in the labs will be necessary to complete several of the assignments, and the exams will be based largely on lecture material, therefore missing either is likely to negatively affect your performance in the class.

OFFICE HOURS

In general, I'll be around Grice (#104 or #205) and available when needed. For those sticklers for formality:

Office hours: Tues. noon - 2:00
Fri. 11:00 - noon, or by appt.

Phone (at Grice lab): 953-9187; e-mail: plantec@cofc.edu

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

1. **Center for Student Learning:** I encourage you to utilize the Center for Student Learning's (CSL) academic support services for assistance in study strategies, speaking & writing strategies, and course content. They offer tutoring, Supplemental Instruction, study strategy appointments, and workshops. Students of all abilities have become more successful using these programs throughout their academic career and the services are available to you at no additional cost. For more information regarding these services please visit the CSL website at http://csl.cofc.edu or call (843)953-5635.

2. **Center for Disability Services (http://disabilityservices.cofc.edu/for-faculty/faqs.php)**

The College will make reasonable accommodations for persons with documented disabilities. Students should apply for services at the Center for Disability Services/SNAP located on the first floor of the Lightsey Center, Suite 104. Students approved for accommodations are responsible for notifying me as soon as possible and for contacting

me one week before accommodation is needed.

ACADEMIC INTEGRITY STATEMENT

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved. Incidents where the instructor determines the student's actions are related more to a misunderstanding will be handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student's file. Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student's transcript for two years after which the student may petition for the XX to be expunged. The F is permanent. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board. Students should be aware that unauthorized collaboration--working together without permission--is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others' exams, fabricating data, and giving unauthorized assistance. Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor. Students can find the complete Honor Code and all related processes in the Student Handbook at http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php

Lecture Schedule

Date	Topic	Readings
8 Jan	I. Course Introduction	
13 Jan	II. The Physical Environment & Adaptation	BBSS ch. 1 & 2
	III. The Players	
15 Jan	A. Producers	BBSS ch. 16
22 Jan	B. Consumers	SR
	IV. Basic Biological Considerations	
27 Jan	A. Mass & Energy Acquisition I	SR
29 Jan	B. Mass & Energy Acquisition II	SR
3 Feb	C. Reproduction & Dispersal	SR
	V. Population Ecology	
5 Feb	A. Population Growth Models	G chap. 1 & 2
10 Feb	B. Age Structure & Growth	G chap. 3
12 Feb	Age Structure & Growth II	
15 Feb (Sat.)	Storm Make-Up Day	
17 Feb	**MIDTERM EXAM**	
	VI. Community Ecology	
19 Feb	A. Competition I	G chap. 5
24 Feb	B. Competition II	SR
26 Feb	C. Predation I	G chap. 6
2 Mar	D. Predation II	BBSS ch. 5
4 Mar	E. Mutualism/Facilitation	BBSS ch. 3
9 Mar	F. Recruitment	BBSS ch. 4
11 Mar	G. Disturbance & Succession	G chap. 8
15-21 Mar	**Spring Break**	
23 Mar	H. Community Structure	G chap. 9
25 Mar	Community Structure II	BBSS ch. 6
	VII. Ecosystems	
30 Mar	A. Pelagia, Polar Seas	BBSS ch. 15
	Rocky Shores	BBSS ch. 9
1 Apr	B. Coral Reefs, Mangrove & Sea Grass Meadows	BBSS ch. 12, 13
6 Apr	C. Soft Bottoms, Salt Marshes	BBSS ch. 10, 11
	Deep Sea	BBSS ch. 17
8 Apr	VIII. Ecosystem Energetics	SR
13 Apr	Energetics (con't) + discussion	
15 Apr	IX. Biogeochemical Cycles	SR
20 Apr	X. Anthropogenic Influences	BBSS ch. 20, 21
22 Apr	XI. Intro. to Fisheries Ecology	TBD
24 Apr	**FINAL EXAM**	

BBSS = Bertness et al. 2014; G = Gotelli 2008; SR = supplemental reading

Schedule is tentative -- expect revisions.

Laboratory Schedule

Labs are scheduled for M (1-4 PM) and W (2-5 PM) in GML 101. The laboratory will be a combination of natural history, laboratory & field experiments. I will try to warn you of special clothes or other items needed for a particular lab but **you are expected to use common sense in deciding what to wear and what to bring** (e.g., an umbrella, boots, sunscreen, bug dope, etc.).

Week	Dates	Activity
1	13, 16 Jan	Plankton
	20, Jan	**MLK Jr. Holiday**
2	27, 29 Jan	Macrofauna of sediments
*3	3, 5 Feb	Benthic sample processing
*4	10, 12 Feb	Shorebird behavior
5	17, 19 Feb	Discussion, sampling lab prep
*6	24, 26 Feb	Sampling lab (*I. obsoleta* abundance) Population dynamics: computer simulations
7	2, 4 Mar	Marine Microbiology: some basics
8	9, 11 Mar	Predation I
	15-21 Mar	**Spring Break**
*9	23, 25 Mar	Predation II
*10	30, 1 Mar/Apr	Biodiversity
11	6, 8 Apr	Competition I (12:00, 1:30)
12	13, 15 Apr	(Fish) Life History
*13	20, 22 Apr	Competition II (12:00, 1:30)

*(potential) lab write-ups associated with this lab

NOTE: All lab write-ups are due *at the beginning of class* on the instructor's due date.