Course Description

The course covers the ecological, biological, and environmental processes that drive patterns in productivity, behavior, population dynamics, and community structure in marine and estuarine ecosystems.

**Prerequisite:** Two semesters of Biology (BSC 2010 and 2011) or equivalent; General Ecology (PCB 4043) or equivalent; Graduate student status

Instructors

Dr. Donald C. Behringer, Associate Professor  
Email: behringer@ufl.edu  
Office: Aquatic Pathology Laboratory, Emerging Pathogens Institute  
Telephone: 352-273-3634  
Office hours: Tuesday 1 – 2 pm, or by appointment

Ms. Erica Ross, PhD student (TA)  
Email: epross@ufl.edu  
Office hours: Online by appointment

Student Learning Outcomes

At the end of this course, each student will have:

- Examined how ecological processes operate in the marine environment
- Compared how ecological concepts are unique and similar in the marine environment relative to terrestrial and freshwater ecosystems
- Assessed the function of the environment in marine ecology
- Examined how the biology and ecology of marine organisms interact
- Developed hypotheses for the outcomes of biotic or abiotic perturbations on populations and communities based on understanding of the ecological principles
- Learned the organisms that represent the trophic levels of a marine food web and their interrelationships.
- Examined the role of time and space in marine ecological processes
- Discussed and debated contemporary issues in marine ecology such as conservation, climate change, and disease
- Lead and moderated discussion of primary literature in marine ecology
- Learned how to develop, organize, and present a field-based lesson to the class via live or distance delivery

Course Meeting Times  Asynchronous – web-based
Texts/Readings

1. Primary literature (1 - 2 journal articles) will be assigned to supplement the material presented each week. The literature will be drawn from current or classic papers and be made available by at least the Friday prior to its coverage the following week. All assigned papers must be read and each student will lead and moderate the online discussion of at least two papers (see below for assignment details).

   Examples include:

2. Readings from the following text will supplement the material presented in class and be made available to students:

Course Format, Policies on Attendance and Make-up Exams

Course format:
This course is intended to provide graduate students with a broad overview of ecological principles operating in estuarine, nearshore coastal, and open ocean systems. The principles introduced will become increasingly complex and interwoven, highlighting the multiplicity of processes driving the patterns observed.

Students will initially be introduced to important primary producers and secondary consumers in each of these systems. Insights into physiological and population levels of organization will build on these basics. Environmental factors that influence species-specific and population-level interactions will be discussed as a transition to the concepts of community organization. All of this material will form a foundation for explaining how the structure and function of communities is maintained over different temporal and spatial scales.

The course will incorporate recorded lecture presentation of the subject matter with online discussions. Upon conclusion of each subject the class will critically discuss primary literature provided by the instructor. Each student will be assigned two weeks to lead and moderate the discussion of the primary literature (see assignment details below).

Course delivery:
This course is co-taught at the undergraduate and graduate levels. Graduate students have additional assignment requirements and are expected to contribute a significantly higher level than undergraduates. Graduate students are also expected to interact with undergraduate students through discussions, presentations, and guidance that will increase learning for both groups and raise the intellectual caliber of the course.
Attendance Policy:
Lectures will be posted within hours after live delivery and will remain accessible for at least two weeks. Students are responsible for viewing the lectures during this period, participating in online discussion sessions while they are active, and for acquiring assignments. Students can only miss a maximum of three (3) discussion sessions. More than this will result in a five (5) point deduction from the final point total for each additional session missed.

Make-up Policy:
Students must request permission to make-up an exam or assignment prior to missing it. If prior permission is not granted the student will receive 0 points for the exam. Late assignments will not be accepted without prior consent of the instructor. Extenuating circumstances or situations that fall within university policies (see https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx) will be addressed on an individual basis.

Assignments

Critical Thinking Questions:
Critical thinking questions will be posted on set Fridays and students will be required to answer the questions by the following week (see due dates on schedule below). The questions will be drawn from either the lecture material or the assigned reading from the previous weeks. The nature of the questions will vary, but will take the materials and concepts covered in class and require the students to adapt and apply that knowledge to solve a problem, plan a research/management approach, or provide a detailed answer, but with a system or problem that is different than discussed in class. The use of creativity and abstract reasoning will be expected. Responses must be submitted via Canvas by 5 pm on the due date. See schedule below for due dates.

Field lesson presentation:
This assignment will help graduate students learn how to present online material to a class in a field setting by requiring them to work as a group (2 – 3) to create and present a field-based video lesson to the class. Students must select a topic by September 13th and turn in a plan for their presentation by September 20th. The presentation are due November 13th and must be 8-10 min in length (no longer!). Detailed instructions for the project will be provided. Each student will be graded individually and the presentations will be graded as follows:
- Content (20 pts)
- Delivery (20 pts)
- Organization (20 pts)
- Originality (20 pts)
- Overall impression (20 pts)

Literature Discussion:
Each week we will have an online discussion about the papers assigned for that week. Each graduate student will lead and moderate the discussion of two journal articles. The instructor and course TA will lead the first discussions so students are aware of what is expected. As noted above, students can only miss a maximum of three (3) discussion sessions. More than
this will result in a five (5) point deduction from the final point total for each additional
session missed. Students will be evaluated on:

- Preparation and knowledge of the material (12.5 pts)
- Organization and flow of discussion (12.5 pts)

**Exams:**

The mid-term exam will cover all of the material presented to that point.
The final exam will cover all of the material presented in the course (~75% post-midterm).

## Evaluation of Student Learning

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
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<tbody>
<tr>
<td>100</td>
<td>Mid-term exam</td>
</tr>
<tr>
<td>100</td>
<td>Field lesson presentation</td>
</tr>
<tr>
<td>100</td>
<td>Critical thinking questions (4 @ 25 points each)</td>
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<tr>
<td>50</td>
<td>Lead primary literature discussion (2 @ 25 points each)</td>
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<tr>
<td>100</td>
<td>Final exam</td>
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<td><strong>450</strong></td>
<td>TOTAL</td>
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## Grading Scale

Grades will be assigned based on the percentage of the total points earned. There will be no plus or minus grades assigned in this course.

- **A** = 90 – 100% = 405 – 450 points
- **B** = 80 – 89% = 360 – 404 points
- **C** = 70 – 79% = 315 – 359 points
- **D** = 60 – 69% = 270 – 314 points
- **E** = < 60% = < 270 points

For additional information on the university grading policy please see: [http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html](http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html)

## Schedule of Class Topics

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Week of:</th>
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<tbody>
<tr>
<td>1</td>
<td>Course Introduction, Scheduling, and other Logistics</td>
<td>Aug 23</td>
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<tr>
<td>2</td>
<td>Ocean Properties</td>
<td>Aug 28 &amp; 30</td>
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<td></td>
<td>Primary Producers and Primary Production</td>
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<td>3</td>
<td>Primary Production</td>
<td>Sep 4 &amp; 6</td>
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<tr>
<td>4</td>
<td>Primary Production and Introduction to Consumers</td>
<td>Sep 11 &amp; 13</td>
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<tr>
<td></td>
<td>(Dr. Frazer – guest lecture on Springs, Nutrients, and Seagrasses)</td>
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<tr>
<td></td>
<td>(<em>Weeks 1/2/3 Questions due Sep 13</em>)</td>
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<tr>
<td></td>
<td>(<em>Group field lesson topic idea due Sep 13</em>)</td>
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Week 5: Consumers and Consumer Dynamics  
  \textit{(Group field lesson plan due Sep 20)}  
  Sep 18 & 20

Week 6: Resources and Competition  
  \textit{(Weeks 4/5 Questions due Sep 27)}  
  Sep 25 & 27

Week 7: Feeding, Food selection, and Responses to Food  
  Mid-term Review  
  Oct 2 & 4

Week 8: Mid-term exam  
  Energy and Production  
  Oct 9 & 11

Week 9: Production (cont) and Nutrient Cycles  
  Oct 16 & 18

Week 10: Larval Ecology, Recruitment, and Succession  
  Oct 23 & 25

Week 11: Community Structure, Trophic Webs, and Biodiversity  
  Field trip to Cedar Key (optional)  
  \textit{(Weeks 8/9/10 Question due Nov 1)}  
  \textit{(NOTE: there is no class Thursday due to Cedar Key trip)}  
  Oct 30 & Nov 1

Week 12: Spatial Structure and Connectivity  
  Nov 6 & 8

Week 13: Climate Change  
  Conservation and Restoration  
  \textit{(Group field lessons due Nov 13)}  
  \textit{(Weeks 11/12 Question due Nov 15)}  
  Nov 13 & 15

Week 14: View and evaluate graduate student presentations  
  Nov 20\textsuperscript{a}

Week 15: Biological Invasions (Guest lecture)  
  Marine Diseases  
  Nov 27 & 29

Week 16: Exam Review and Current Issues in Marine Ecology  
  Dec 4

Week 17: Final Exam 12:30pm – 2:30pm  
  Dec 14

\textsuperscript{a} No class November 22\textsuperscript{nd} (Thanksgiving)

\section*{Additional References}

\textbf{Web Sites :}  
  \begin{itemize}
  \item Growth, competition, and predator-prey models  
  \url{http://www.blackwellpublishing.com/townsend/models/index.htm}
  \end{itemize}
Other literature sources:
Web of Knowledge
http://apps.isiknowledge.com/UA_GeneralSearch_input.do?product=UA&search_mode=GeneralSearch&SID=4C5mNGg@8e3@GGr611N&preferencesSaved=


Other Information

**Academic Honesty, Software Use, UF Counseling Services, Services for Students with Disabilities**

In 1995 the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

In adopting this honor code, the students of the University of Florida recognize that academic honesty and integrity are fundamental values of the university community. Students who enroll at the university commit to holding themselves and their peers to the high standard of honor required by the honor code. Any individual who becomes aware of a violation of the honor code is bound by honor to take corrective action. The quality of a University of Florida education is dependent upon community acceptance and enforcement of the honor code.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

The university requires all members of its community to be honest in all endeavors. A fundamental principle is that the whole process of learning and pursuit of knowledge is diminished by cheating, plagiarism and other acts of academic dishonesty. In addition, every dishonest act in the academic environment affects other students adversely, from the skewing of the grading curve to giving unfair advantage for honors or for professional or graduate school admission. Therefore, the university will take severe action against dishonest students. Similarly, measures will be taken against faculty, staff and administrators who practice dishonest or demeaning behavior.

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean or Student Honor Court.

(Source: 2010-2011 Undergraduate Catalog)
It is assumed all work will be completed independently unless the assignment is defined as a **group project**, in writing by the instructor.

This policy will be vigorously upheld at all times in this course.

**Software Use:**
All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

**Campus Helping Resources**
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, [www.counseling.ufl.edu/cwc/*](http://www.counseling.ufl.edu/cwc/)*

  Counseling Services
  Groups and Workshops
  Outreach and Consultation
  Self-Help Library
  Training Programs
  Community Provider Database

- *Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/]*

**Students with Disabilities**
The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues.

0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)

**Complaints**
Should you have any complaints with your experience in this course please visit [http://www.distance.ufl.edu/student-complaints](http://www.distance.ufl.edu/student-complaints) to submit a complaint.