## Graduate Programs—NEW COURSE PROPOSAL

**DEPARTMENT:** BIOLOGICAL SCIENCES  
**COLLEGE:** COLLEGE OF SCIENCE

### RECOMMENDED COURSE IDENTIFICATION:

**PREFIX**  
**PCB**  
**COURSE NUMBER** 6050  
**LAB CODE** (L or C)  
*(TO OBTAIN A COURSE NUMBER, CONTACT MJENNING@FAU.EDU)*

**COMPLETE COURSE TITLE:** Marine and Estuarine Community Dynamics

**CREDITS:** 3  
**TEXTBOOK INFORMATION:**  

### GRADING (SELECT ONLY ONE GRADING OPTION):  
REGULAR **X**  
SATISFACTORY/UNSATISFACTORY

**COURSE DESCRIPTION, NO MORE THAN THREE LINES:** Community, landscape, food web, and similar features of marine systems will be studied. Both basic and applied (conservation and restoration) aspects of communities will be included.

### PREREQUISITES *:  
Graduate standing or Permission of the instructor

### COREQUISITES:

### REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL) *:

* **PREREQUISITES, COREQUISITES AND REGISTRATION CONTROLS WILL BE ENFORCED FOR ALL COURSE SECTIONS.**

**MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE:** PH.D. IN THE RELEVANT FIELD

**Faculty contact, email and complete phone number:**  
Dr. C. Edward Proffitt  
cproffitt@fau.edu  
(772) 242-2297

**Please consult and list departments that might be affected by the new course and attach comments.**

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**Email this form and syllabus to UGPC@fau.edu one week before the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.**

*FAUnewcourseGrad—Revised September 2013*
Course Syllabus for Marine and Estuarine Community Dynamics for Marine and Estuarine Community Dynamics

1. Course Title/number and credit hours
   Course Title, course number and number of credit hours
   Marine and Estuarine Community Dynamics – PCB 6050 – 3 credit hours

2. Course prerequisites
   a. Graduate standing
   or
   b. Permission of the instructor

3. Course logistics
   a. Term - Fall 2015
   b. Notation if online course – N/A
   c. Class location and time (if classroom-based course) – To be determined

4. Instructor contact information
   a. Lead Instructor’s name -- C. Edward Proffitt
   b. Office address -- Department of Biological Sciences, c/o Harbor Branch
      Oceanographic Institute, Marine Science II room 105, Ft. Pierce, FL
   c. Office hours – To be determined
   d. Contact telephone number – office (772) 242-2207, fax (561) 297-2436
   e. E-mail address -- cproffit@fau.edu

5. TA contact information (if applicable)
   N/A

6. Course description
   This course will cover topics in the ecology of marine and estuarine plant and animal
   communities. Structure and function in these systems will be explored in the context of
   relevant ecological hypotheses/theories (topics), such as the stress gradient hypothesis,
   intermediate disturbance hypothesis, alternate stable states, trophic cascades, biodiversity
   and global climate change. For example, sessile and sedentary marine species in the
   intertidal zone possess special morphological, physiological, and/or behavioral traits that
   allow for survival across the physical stress gradient of flooding and exposure with tidal
   cycles. The influence of physical factors and interactions on primary producers, and
   among component species and trophic groups will be one focus of the course. Biological
   interactions may also vary with tide level from marine species at high tide to terrestrial
   species at low tide. Furthermore, many terrestrial taxa such as insects and birds have
   evolved features that promote their use of shallow water marine habitats. Interacting
   species can also change with season, as some communities include transient species that
   engage with permanent residents for only a portion of their life cycle. Moreover, in some
   cases communities can exist in alternate states in time, and dominance can switch from
   reef (oyster or coral) to algae, depending on environmental stress or disturbance.

   Shifts with global climate change will also be considered for example, salt marsh may
   give way to mangrove forest in part of the area in which these two systems overlap. We
will examine the importance of shifting and invasive species relative to species interactions, and ecological function in these changing communities.

Biodiversity can also affect interactions/links between species, food web complexity as well as the extent and nature of trophic cascades. Estuaries in particular have high biodiversity. Higher trophic levels are mainly supported by intertidal (mangrove, salt marsh), subtidal (seagrass, macroalgae), and planktonic primary production via pathways ranging from direct grazing of herbivores and carnivores to detrital decomposition. In contrast, many oceanic systems depend on primary productivity from phytoplankton as the base of community structure.

Also, we will examine the role of diversity in dispersal, colonization, shifts with global change, local extinction and stability in different systems. This class will assess species-environment and species-species interactions in different alternative states; and, the cascading effects through ecological functions of differences in those interactions.

7. Course objectives/student learning outcomes
In this course an objective of student learning will be species interactions, diversity, and ecological functions of marine and estuarine communities.

Students will be able to: discuss marine and estuarine communities in the context of important and relevant ecological theories.

8. Course evaluation method
There will be graded homework project assignments accounting for 60% of the student’s cumulative performance. Presentation of results in oral and written form will account for the remaining 20%. Tests will count for 20%.

9. Course grading scale (optional)

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<thead>
<tr>
<th>Cumulative Performance</th>
<th>Grade</th>
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<tbody>
<tr>
<td>&gt;94%</td>
<td>A</td>
</tr>
<tr>
<td>&gt;90% - 94%</td>
<td>A-</td>
</tr>
<tr>
<td>&gt;87% - 90%</td>
<td>B+</td>
</tr>
<tr>
<td>&gt;83% - 87%</td>
<td>B</td>
</tr>
<tr>
<td>&gt;80% - 83%</td>
<td>B-</td>
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<tr>
<td>&gt;75% - 80%</td>
<td>C+</td>
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<tr>
<td>&gt;65% - 75%</td>
<td>C</td>
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<tr>
<td>&gt;60% - 65%</td>
<td>C-</td>
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<td>&gt;57% - 60%</td>
<td>D+</td>
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<td>&gt;53% - 57%</td>
<td>D</td>
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<td>&gt;50% - 53%</td>
<td>D-</td>
</tr>
<tr>
<td>&lt;50%</td>
<td>F</td>
</tr>
</tbody>
</table>

10. Policy on late work and incompletes
If a student cannot and in a homework project on time due to circumstances beyond their control then the instructor may assign appropriate make-up work. Students will not be penalized for absences due to participation in University-approved activities, including athletic or scholastics teams, musical and theatrical performances, and debate activities. These students will be allowed to make up missed work without any reduction in the student’s final course grade. Reasonable accommodation will
also be made for students participating in a religious observance. Also, note that grades of Incomplete ("I") are reserved for students who are passing a course but have not completed all the required work because of exceptional circumstances. A grade of "I" will only be given under certain conditions and in accordance with the academic policies and regulations put forward in FAU's University Catalog. The student must show exceptional circumstances why requirements cannot be met. A request for an incomplete grade has to be made in writing with supporting documentation, where appropriate.

11. Special course requirements (if applicable)
N/A

12. Classroom etiquette policy (if applicable)
University policy on the use of electronic devices states: "In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be disabled in class sessions."

13. Disability policy statement
In compliance with the Americans with Disabilities Act (ADA), students who require special accommodation due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) -- in Boca Raton, SU 133 (561-297-3880); in Davie, MOD 1 (954-236-1222); in Jupiter, SR 117 (561-799-8585); or at the Treasure Coast, CO 128 (772-873-3305) -- and follow all OSD procedures.

14. Honor Code policy statement
Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 at http://www.fau.edu/regulations/chapter4/4.001
Honor_Code.pdf.

15. Required texts/readings


16. Supplementary/recommended readings (optional)

Hammerstrom et al. 2006. Aquatic Bot. 84:110-120. (Halophila seed bank, W. Fla).


17. Course topical outline

- Physical and environmental gradients affecting marine species and communities (1 week)
- Factors affecting primary production and higher order ecological consequences (2 weeks)
- Food web dynamics and trophic cascades:
  - coastal ocean (2 weeks)
✓ estuaries (2 weeks)

- Colonization processes and community structure (1 week)
- Disturbance and recovery
  
  ✓ oceanic communities (1 week)
  ✓ estuarine communities (1 week)

- Competition in marine and estuarine communities (2 weeks)
- Species diversity and community structure and stability (2 weeks)
- Effects of global change on community structure, stability, and ecological functions (2 weeks)