## FLORIDA ATLANTIC UNIVERSITY

### Graduate Programs—NEW COURSE PROPOSAL

**DEPARTMENT:** Geosciences  
**COLLEGE:** College of Science

**RECOMMENDED COURSE IDENTIFICATION:**
- **PREFIX:** OCE  
- **COURSE NUMBER:** 6455  
- **LAB CODE (L or C):**

**(TO OBTAIN A COURSE NUMBER, CONTACT MUNNING@FAU.EDU)**

**COMPLETE COURSE TITLE:** Physical and Geological Oceanography

**CREDITS:** 3  
**TEXTBOOK INFORMATION:** Introduction to Physical Oceanography, John A. Knauss, Waveland Press Inc, 2005 - Science - 309 pages  
Hydrodynamics of Coastal Zones, S.R. Massel - April 1, 1989, Elsevier – Publisher

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

**COURSE DESCRIPTION, NO MORE THAN THREE LINES:** This course provides an overview of the atmospheric, physical, and geological processes that govern our oceans and coastal margins.

**PREREQUISITES:**

**COREQUISITES:**

**REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL):**
- Permission of the instructor

---

**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:  
Laurent Cherubin and Mingshun Jiang  
lcherubin@fau.edu, jiangm@fau.edu  
(772) 2242-2314 (Cherubin), (772) 224-2254 (Jiang)

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

---

**Approved by:**

**Date:** 3-6-14  
5-19-14  
3-14-14  
14-1-14  
3-24-14

1. **Syllabus must be attached; see guidelines for requirements:**  
2. **Review Provost Memorandum:**  
[Definition of a Credit Hour](http://www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf)
3. **Consent from affected departments (attach if necessary)**

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 Physical and Geological Oceanography

1. Course title/number, number of credit hours
   Physical and Geological Oceanography – OCE 6455 – 3 credits

2. Course prerequisites
   None

3. Course logistics
   a. Term – Fall 2014
   b. N/A
   c. Class location and time (if classroom-based course)
      T/R - MC 209

4. Instructor contact information
   a. Instructor’s name – Laurent Cherubin and Mingshun Jiang
   b. Office address – HBOI, Lab II, Room 204 & 203
   c. Office hours – To be determined
   d. Contact telephone number – office (772) 2242-2314 (Cherubin), (772) 242-2254 (Jiang), fax (772) 242-2412
   e. E-mail address – lcherubin@fau.edu, jiangm@fau.edu

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

6. Course description
   Core course in ocean dynamics and coastal geology. Focuses on major processes that govern: Water masses; Ocean-atmosphere interactions; General circulation, Ekman circulation, Sverdrup balance and Rossby waves; Gravity waves, tides and coastal circulation; Sea level variations; Tracer input in the coastal seas; Estuarine dynamics; Coupled physical and biogeochemical processes; Coastal systems and the land-sea interface; Coastal processes and geological features; Intra-America Seas geological history; Coral reef geology; Human impact on coastal systems; Climate change and coastal systems.

7. Course objectives/student learning outcomes
   This course aims to introduce the fundamental processes that govern ocean dynamics and coastal geological features.
   
   Students will be able to understand how the ocean is set in motion and how internal processes driven by the sun, the moon, and the wind define its motions. They will understand how the coastline is shaped by the ocean, climate and humans.
8. Course evaluation method
There will be graded homework assignments accounting for 40% of the student's cumulative performance, a midterm exam, accounting for 30% of the student's cumulative performance, and a final exam that accounts for 30% of the cumulative performance. The overall grade in the course is derived from the cumulative performance according to the following table.

9. Course grading scale (optional)

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

10. Policy on makeup tests, late work, and incompletes
If a student cannot attend an exam or hand 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/Reg_4.001_5-26-10_FINAL.pdf

15. **Required texts/reading**

- Introduction to Physical Oceanography
  John A. Knauss
  Waveland Press Inc, 2005 - Science - 309 pages

- Geological Approaches to Coral Reef Ecology
  Richard B. Aronson - March 9, 2007
  Springer – Publisher

- Hydrodynamics of Coastal Zones
  S.R. Massel - April 1, 1989
  Elsevier – Publisher

16. **Supplementary/recommended readings (optional)**

- Descriptive Physical Oceanography: An Introduction, Edition 6
  Academic Press – Publisher
17. Course topical outline

1. Introduction: importance of geophysical fluid dynamics
   Homework assignment: evaluate horizontal and vertical extent of main oceanic features

2. Water characteristics and physical properties of sweater
   Homework assignment: group projects on waters masses in the Caribbean

3. Atmospheric general circulation buoyancy fluxes and wind forcing
   Homework assignment: group projects on ocean heat fluxes

4. Ocean general circulation and dynamical processes
   Homework assignment: group projects on ocean processes in our coastal seas

5. Gravity waves, tides and coastal oceanography
   Homework assignment: group projects on the analysis of tidal time-series and other type of coastal waves

6. Currents in coastal zones
   Homework assignment: group project on rip currents on our beaches

7. Sea level variations
   Homework assignment: group project on tsunamis in the Caribbean

8. Tracer input in the coastal seas
   Homework assignment: group project on tracer input in the Indian River Lagoon

9. Estuarine dynamics
   Homework assignment: group project on water management in Everglades National Park

10. Coupled physical and bio-geochemical processes
    Homework assignment: group project on ocean acidification

11. Overview of coastal systems and the significance of the land–ocean interface
    Homework assignment: group project on Florida shoreline

12. Coastal processes and features
    Homework assignment: group project on Intra-America Seas coastal features
13. **Intra-America Seas geological history**
   Homework assignment: group project on Intra-America Seas major geological events

14. **Coral reef geology**
   Homework assignment: group project on coral reef diversity relative to geological structure

15. **Coastal systems and human impacts**
   Homework assignment: group project on coastal development and shoreline erosion in Florida

16. **Climate change and coastal systems**
   Homework assignment: group project on hurricanes and geological landscape shifts