Our Coastal Environment from the Bay to the World
A Foundational Global Learning Course
IDS 3214, 3 credits
Location TBA, Time TBA, Spring 2010

<table>
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<tr>
<th>Peter Craumer</th>
<th>Hugh Gladwin</th>
<th>Rebecca Vega-Thurber</th>
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<tbody>
<tr>
<td>Global and Sociocultural Studies</td>
<td>Institute for Public Opinion Research</td>
<td>Marine Biology</td>
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<tr>
<td>Politics and International Relations</td>
<td>Global and Sociocultural Studies</td>
<td>Biological Sciences</td>
</tr>
<tr>
<td>Office AC 316</td>
<td>Office HM 246</td>
<td>Office MS 355</td>
</tr>
<tr>
<td>Phone 305-919-5818</td>
<td>Phone 305-919-4718</td>
<td>305-919-4009</td>
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<td>Email-Course Mail</td>
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COURSE DESCRIPTION

Students taking this class live in a world where environmental changes are going to greatly affect their lives. In most places on the globe people have lived in a situation where their basic needs for food, shelter, and health clearly depend on sustainable land and ocean ecosystems. However, in the modern world, advances in technology and agriculture have allowed people to feel mostly immune to changes in the environment. This is no longer the case, and students today must acquire the knowledge to understand their new situation and how it works globally. They need to become engaged in the process of ensuring a sustainable world of humans and nature. The purpose of the course is to give students a foundation for acquiring that knowledge and placing themselves in its global context.

The course is based on the example of human and natural systems interacting outward from coastal environments like South Florida. In these places global human economic and political processes interact intensely with global changes in climate and sustainability of connected marine and land ecosystems. In the first part of the course, students will learn basic concepts of natural and human systems using principles of relevant natural and social sciences. In the second part of the course, specific case studies will be used to reiterate these concepts in terms of specific human communities and their cultures both influencing and being influenced by their local and global natural environment.

NATURAL SCIENCES CORE CURRICULUM COURSE COMPETENCIES

Students will be able to analyze and critique case studies using the scientific methods of Biology, Chemistry, Earth Science, and the Social Sciences, focused on coastal and marine environments. Students will also be able to analyze and critique the unique aspects of those ecosystems that influence different cultures and societies and, in reverse, how those societies view and influence their own coastal ecosystems. Overall this course will provide students the knowledge and
quantitative/analytical skills to interpret global dynamics of biological and environmental changes in coastal and marine settings.

GLOBAL INITIATIVES LEARNING COURSE GOALS & OUTCOMES

- GLOBAL AWARENESS
  Students will be able to interpret current global physical and human dynamics of the oceans and coasts in the context of interrelated sociological, biological, and environmental changes.

- GLOBAL PERSPECTIVE
  Students will be able to assemble a cross disciplinary and multi-perspective analysis of ideas about the interrelationship between humans, oceans, and coasts.

- GLOBAL ENGAGEMENT
  Students will be able to analyze and critique the relationship between the environment and different cultures and societies with particular reference to the coastal and marine environment.

ESSENTIAL QUESTIONS

- How do different cultures and societies interact with their environments differently?
- How should cultures and societies perceive and value their relationship to the coastal environment?
- How do global dynamics drive the relationships between people and the environment?

PEDAGOGICAL STRATEGIES

This course aims to use several pedagogical strategies including: team based learning, quizzes, exams, and a pre- and post-test assessment of student’s understanding about and development of global learning dynamics and perspective.

At the beginning of the course students will be formed into teams following the procedures of team-based learning. These teams will keep the same membership throughout the course and be the groups doing the final case study together. Some classes will be taught using a lecture format and others using individual and team readiness assessment tests followed by team projects. A detailed explanation of how this process will work will be posted on the web site.

Clickers will be used to determine student’s grasp of concepts in class and potentially for team based examinations.
Specific case studies will be used to reiterate key concepts of these topics, introduce new concepts, and to impart how each highlighted culture or society both influences and is influenced by its local environment and also by the global environment. The course will culminate in the presentation of a hypothetical case study that students will be required to evaluate and debate in class. This last assignment will require a significant level of understanding about all the aspects of the class. Students will be evaluated on an individual and team level. Students will also be required to do a peer assessment of other team members' strengths and weakness.

**Assessment Strategy**

The assessment strategy will be to build measures of the required competencies into as many of the assessments as is feasible. Students will be aware of all the goals and required competencies of the course and can be expected to be tested on them in any assessment.

**Assessments:**
- Pre/post-survey/test for students about how they view humans and the environment in general and coastal and marine environments in particular. This assessment will include questions about the fundamental principles of the scientific method and of the natural sciences that will be covered in the course. It will allow us to assess Natural Science Core Competencies as well as the Global Learning student learning outcomes associated with the Global Awareness and Global Perspective goals. The post test will be used as the course final exam.
- Readiness assurance test (individual, group). These frequent tests on the reading will assess both Natural Science Core Competencies (principles of natural sciences) and Global Awareness.
- Midterm exam. This multiple choice exam will assess Natural Science Core Competencies (knowledge of scientific principles, global dynamics) and Global Awareness.
- Final team case study project. This written assignment will assess all of the goals of Global Learning as well as Core Natural Science Competencies.
- Team peer assessment
- Attendance, participation, completion of assignments

**Course Grading Policy**

Grades will be based on the following: Readiness assurance tests 20%; midterm exam 20%; final exam 20%; case study writing assignment 20%; team peer assessment 10%; attendance 10%.

**Required Readings**

The following materials will be available from the FIU bookstore.
A reader of chapters from ocean and coastal science books by McGraw Hill Publishers (see key texts below) will be in xerox form, or in color in e-text form at their Primus web site:


In addition, readings (mostly short) will be provided through the class Blackboard site.


**Part I: Introduction to the Course and the Global Learning Initiative (week 1)**

Students will be introduced the global learning initiative concepts including: individual versus global perspectives, team teaching methods, and the general philosophy of humans and the environment. The course will begin with a pre-poll/test for students about how they view humans and the environment. This will serve as a self and direct assessment later in the course when students will be required to revise their statements based on the knowledge they have acquired during the course.


**Part II. Introduction to Concepts and Principles of Humans and the Environment (weeks 2-3)**

This section aims to inform students about the scientific method, foundational biological, chemical, and Earth Science concepts that concern coastal dynamics.
1. Introduction to the science of oceans and coasts (week 2)
   a. Scientific principles and methods
      Scientific worldview, inquiry, and enterprise (Project 2061 Ch. 1)
      Variation and why it matters (Project 2061 Ch. 11)
      Scientific classification & terminology
   b. Introduction to biology (Castro & Huber Ch. 4)
      What is biology?
      Key concepts that unite biology: ecology & evolution.
      human interaction, population increase, carrying capacity ecosystem services
      (Ecosystems Services: A guide for decision makers World Resources Institute)
   c. History of Ocean and Biological Exploration (Sverdrup Ch. 1 & 2)
   d. The oceans and the atmosphere and climate
      Water planet (Sverdrup Ch. 2)
      Chemical & physical exchange with the atmosphere (Sverdrup Ch. 7)
      Climate change (Valiela Ch. 2 & 3)
      Ocean circulation (Sverdrup Ch. 8)
      Overview of coastal dynamics (Valiela Ch. 1)

2. Fundamentals of a living ocean (weeks 3-4)
   a. The ocean and coastal habitats and ecosystems (Castro & Huber Ch. 2)
      Living in a fluid environment: Physical and Chemical features of seawater
      (Sverdrup Ch. 5-6)
   b. Introduction to marine organisms (Castro & Huber Ch. 17)
      Microorganisms, the unseen majority
      Plants and algae, the primary producers
      Invertebrates
      Vertebrates
      Fisheries and resources of the sea

3. Human History and the Oceans and coasts (week 5)

4. Human Impacts on the Sea (week 6)
   Overview
   Climate change
   Acidification
   Sediment transport
   Habitat loss
   Exotic species
   Over-fishing
   Pollution
   Readings: The Unnatural History of the Sea, The Rising Sea

Part IV. Case Studies to Investigate Humans and the Environment (weeks 7-13)
1. South Pacific (week 7)
   Introduction to coral reef ecosystems
   Effects of Ocean acidification (film: The Darkening Sea)
   Concepts of sustainable fisheries, artesian fishing, historical knowledge,
   perspective of ecosystem services
   Readings:
   *Unnatural History of the Sea*, ch. 17, "Collapse of Coral"

2. Gloucester, MA (weeks 8-9)
   Introduction to temperate coastal systems
   Concepts: tragedy of the commons, fisheries management, ecosystem based
   versus resource based management
   Readings:
   *The Last Fish Tale*
   *Unnatural History of the Sea*, "Cod"

3. Bangladesh (week 10)
   Introduction to wetlands and estuaries
   Concepts: energy budgets, black carbon, local efforts versus international,
   glaciers and global climate, pollution and human health, sea level rise, water
   rights
   Readings:
   "Waterworld" by Kaplan in the *Atlantic*
   "Impacts of climate change and sea-level rise on cyclonic storm surge floods in
   The Melting Himalayas: Cascading Effects of Climate
   Change on Water, Biodiversity, and Livelihoods

4. New Orleans (week 11)
   Introduction to subtropical coastal areas
   Concepts: hurricanes, aquaculture, sedimentations
   Movie: Hurricane on the Bayou
   Readings: *The Rising Sea* (chapter on living coasts, ground zero MS delta)

5. Arctic (week 12)
   Environmental change in the Arctic
   Concepts: law of the sea, climate change, impact on arctic human
   communities and ecosystems
   Readings:
   "The Scrambling for the Seabed", *Economist*, May 19, 2009

6. South Florida (week 13)
   Introduction to Florida’s coastal issues
   Concepts: invasive species, mitigation issues, resource competition
Readings: The Rising Sea; "Initial Estimates of the Ecological and Economic Consequences of Sea Level Rise on the Florida Keys through the Year 2100." Report, The Nature Conservancy

7. team project: case study on south Florida climate change

GENERAL COURSE POLICIES

Attendance: Students are expected to come to every class, arrive on time and arrive having learned the material for the week by class time. This class follows standard FIU policy regarding student absence for sickness, religious observations, etc.

Plagiarism/Academic Honesty: Students are always expected to abide by the university's policies particularly those governing academic honesty and plagiarism as they appear in the FIU Student Handbook. Students not familiar with how to avoid plagiarism, will find links to the FIU library tutorials and information in week one of the on-line materials. Additionally, if student work cites data, research or information that he or she has not generated and which is not general knowledge it must be cited appropriately following one of the disciplinary conventions of the academic disciplines represented by the faculty teaching this course. More information about citation formatting will be provided via Blackboard. Students must become completely familiar with bibliographic styles and citation conventions. If others’ work is not cited adequately by a student he or she can be accused of plagiarism, accusations FIU takes very seriously. The instructors reserve the right to use turnitin.com to check work and to alter the syllabus if needed to deter plagiarism. You will be notified of any changes.

Cell Phones, Computers, etc.: Cell phones, PDAs, MP3 players, or computers may be used in class only when allowed by the teachers for class-related activities specifically, not for personal use and amusement.

Special Needs Students need notify the faculty prior to or immediately upon commencement of this course about accommodation needs in accordance with FIU policy. They will be accommodated accordingly.

Incomplete Grades: An incomplete grade is a temporary symbol given at the discretion of the instructor for work not completed; because of serious interruption not caused by the student’s own negligence. An incomplete grade must be made up as quickly as possible but no later than two consecutive semesters or it will automatically default to the grade the student earned in the course. There is no extension to the two consecutive semester deadline. The student must not register again for the course to make up the incomplete. In order to receive an incomplete for this class, valid documentation must be provided for the reason the student is requesting the incomplete. The reason, again, must be out of the student’s control.
Questions and Complaints: If a student has a question about the class material, assignment, or other requirement, he or she may call and make an appointment ahead of time. Failure to meet this deadline indicates the student’s agreement with the grade received. Instructors’ office hours and email contacts will be available and kept up to date in Blackboard.

* Please note that the instructors reserve the right to alter the syllabus due to need and emergent circumstances. Students will be advised about any change made to the syllabus.