Course Overview

Over half the world's population lives concentrated in coastal areas. Yet, coastal areas encompass only ~10% of the earth's land surfaces. The coastal population is expected to rise, further intensifying the pressure human activity has on coastal zones.

Coastal areas are of great interest: here land and ocean meet. Any changes in either the oceans or on land will affect each other. It is in our best interest to manage and to protect our ecologically diverse coastal areas so they will sustain their value. But balancing human use of coastal areas with ecosystem health is a challenging task. Urban development leads to natural habitat loss, including the loss of wetlands, marshlands, mangrove forests, sand dunes. The coastal ocean is the richest fishing ground and overfishing in many parts of the world has led to the demise of fish. Pollution of water and air adds to the problem.

The list of physical resources found in coastal oceans is long and includes oil, gas, sand, gravel, and minerals. Harvesting these marine resources is dangerous and costly. Climate change imposes a major threat for coastal areas. Ocean temperatures are rising and ocean chemistry is changing. As a result marine species distribution is changing. Coral reefs are especially susceptible to climate change and ocean acidification. Ice sheets and glaciers melt and ocean water expands due to rising temperatures. Consequently sea level rises. Sea level rise poses many risks: low-lying coastal infrastructures will be flooded. Wind patterns are shifting and floods and storm surges will affect low-lying areas. Coastal environments are changing, affecting both marine and terrestrial ecosystems.
Course Goals and Objectives
- To provide fundamental understanding of oceanic processes and interaction between oceans, atmosphere, and coast lines.
- To assess the extent of global coastal changes (natural and human-caused) and their effects on coastlines.
- To think about how coastal areas should be best managed to balance human interest with protecting valuable habitats for wildlife and fisheries.

Course Prerequisite:
Chem 107 or equivalent

Texts and Materials
- No required text
- Supplementary material accessible though the students’ university accounts (TBA)

For review of fundamental principles of oceanography (optional) or for further readings (optional), please contact instructor
- Oceanography: An invitation to marine science by Tom Garrison

Important Dates to Remember*
*Please check the official CSU website for updates

Last Day to Add/Drop Classes: January 24th (without overrides)
Withdrawal Deadline: March 21st (with course grade W)
Spring Recess: March 14th to March 17th
Final Examination: THURSDAY MAY 12th: 2:00-4:00PM

Schedule of Exams and Assignments*
*Subject to change

Midterm Exam 1 (in class_20%): 03/08
Midterm Exam 2 (take home_15%): 04/19, due by email on 04/22 at 10PM

Homework 1: 01/28 & 02/02 Types of Coasts (5%)
Homework 2: 02/18 & 02/23 Greenhouse Gases (10%)
Homework 3: 03/22 & 03/24 Coastal Ecosystems (5%)
Homework 4: 04/05 & 04/07 Where the River meets the Sea (10%)

Dates for Final Presentation and Paper:
- Select topic: 04/12
- Outline: 04/26
- Presentations: 05/03, 05/05, 05/12
- Final paper due: 05/12, at the end of class (hard copy) and a copy via email by 10PM
### Basis for Final Grade

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Percent of Final Grade</th>
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<tbody>
<tr>
<td>a. Midterm 1</td>
<td>20%</td>
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<tr>
<td>b. Midterm 2 (take home)</td>
<td>15%</td>
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<tr>
<td>c. Homework assignments (4)</td>
<td>30%</td>
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<tr>
<td>d. Participation</td>
<td>10%</td>
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<td>e. Final Presentation and Paper</td>
<td>25%</td>
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<td>100%</td>
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Official CSU grading scale:

- A+ (97-100); A (93-96); A- (90-92);  
- B+ (87-89); B (83-860; B- (80-82);  
- C+ (77-79); C (70-76)  
- D (60-69); F (<60)

### Course Policies:

a. Grades of "Incomplete":

Per university policy, an instructor may assign temporary grade of Incomplete to a student who demonstrates that he or she could not complete the requirements of the course due to circumstances beyond the student's control and not reasonably foreseeable. A student must be passing a course at the time that an Incomplete is requested unless the instructor determines that there are extenuating circumstances to assign an Incomplete to a student who is not passing the course. When an instructor assigns an Incomplete, he or she shall specify in writing using the Department Incomplete Grade Form the requirements the student shall fulfill to complete the course as well as the reasons for granting an Incomplete when the student is not passing the course. The instructor shall retain a copy of this statement in his or her grade records and provide copies to the student and the department head or his or her designee. (Section I.6 of the Academic Faculty and Administrative Professional Manual)

b. Disability Access:

Colorado State University is committed to providing reasonable accommodations for all persons with disabilities. Students with disabilities who need accommodations must first contact Resources for Disabled Students before requesting accommodations from the professor.

Resources for Disabled Students (RDS; http://rds.colostate.edu/home) is located in room 100 of the General Services Building. Their phone is (970) 491-6385 (V/TDD). Students who need accommodations in this course must contact the professor at the beginning of the semester to discuss needed accommodations.

c. Attendance Policy:

Students must inform instructor prior to the anticipated absence and take the initiative to make up missed work in a timely fashion.

For the purposes of this regulation, University-sanctioned activities include competitions, events and professional meetings in which students are officially representing the institution. Appropriate sanctioned activities include:

- Intercollegiate athletics;
- Collegiate club sports and competitions;
- Conferences and workshops recognized by the University not related to academics;
Commitments on behalf of the University (ASCSU, band, etc.); and
Professional activities recognized by the University related to academics.
Department heads or their designated representatives must approve sanctioned professional and
departmental activities. Other sanctioned activities must be approved by the appropriate program
director on record with the Division of Student Affairs offices or the Department of Athletics.

d. Religious Accommodation:
Participation in official University activities, e.g., an out-of-town athletic event, or special religious
observances may provide a legitimate reason for an excused absence. The student is responsible for discussing
this with the instructor at the beginning of the semester.

e. Final Exam Policy:
Final examination week is part of the regular semester. Student attendance shall be consistent with
University policy.
If a student has three or more final examinations (not classes) scheduled for the same day or if conflicts of
examination times occur, the student may negotiate a time change with the instructors involved. If the parties
involved cannot find a mutually agreeable time, the Registrar’s Office indicates which courses must be changed.
Note: The Registrar’s Office must be notified at least one week prior to Final Examination Week to allow
instructors time to make appropriate accommodations. It is the student’s responsibility to initiate negotiations.
Any student who has a conflict with the examination schedule must inform the instructor as soon as possible
before the examination. If an agreement cannot be reached between the instructor and student as to the
appropriateness of a make-up examination the student should appeal to the department head.
http://www.registrar.colostate.edu/final-exams

f. Professionalism Policy:
Per university policy and classroom etiquette; mobile phones, iPods, etc. must be silenced during all
classroom sessions. Use your laptop for class-related activities only. When emailing the instructor, please
include your full name, CSU ID, and the course number in your email. Emails sent from your CSU RAM email
address will be given priority.

g. Academic Integrity:
The Department of Forest and Rangeland Stewardship takes academic integrity seriously. At minimum,
academic integrity means that no one will use another's work as his/her own. The CSU writing center defines
plagiarism this way:
Plagiarism is the unauthorized or unacknowledged use of another person's academic or scholarly work.
Done on purpose, it is cheating. Done accidentally, it is no less serious. Regardless of how it occurs, plagiarism is
a theft of intellectual property and a violation of an ironclad rule demanding "credit be given where credit is
due."
Source: (Writing Guides: Understanding Plagiarism.
If you plagiarize in your work you could lose credit for the plagiarized work, fail the assignment, or fail the
course. Each instance of plagiarism, classroom cheating, and other types of academic dishonesty will be
addressed according to the principles published in the CSU General Catalog (see page seven, column two:
http://www.catalog.colostate.edu/1.6POLICIES11112f.pdf).
Of course, academic integrity means more than just avoiding plagiarism. It also involves doing your own
reading and studying. It includes regular class attendance, careful consideration of all class materials, and
engagement with the class and your fellow students. Academic integrity lies at the core of our common goal:
to create an intellectually honest and rigorous community. Because academic integrity, and the personal and social integrity of which academic integrity is an integral part, is so central to our mission as students, teachers, scholars, and citizens, we will ask you to sign the CSU Honor Pledge as part of completing all of our major assignments. While you will not be required to sign the honor pledge, we will ask each of you to write and sign the following statement on your papers and exams:

"I have not given, received, or used any unauthorized assistance."

h. Title IX Information
CSU’s Student Sexual Harassment and Violence policy, following national guidance from the Office of Civil Rights, requires that faculty follow CSU policy as a “mandatory reporter” of any personal disclosure of sexual harassment, abuse, and/or violence related experiences or incidents shared with the faculty member in person, via email, and/or in classroom papers or homework exercises. These disclosures include but are not limited to reports of personal relational abuse, relational/domestic violence, and stalking. While faculty are often able to help students locate appropriate channels of assistance on campus (e.g., see the CSU Health Network link below), disclosure by the student to the faculty member requires that the faculty member inform appropriate CSU channels to help ensure that the student’s safety and welfare is being addressed, even if the student requests that the disclosure not be shared.

For counseling support and assistance, please see the CSU Health Network, which includes a variety of counseling services that can be accessed at: [http://www.health.colostate.edu/](http://www.health.colostate.edu/). And, the Sexual Assault Victim Assistance Team is a confidential resource for students that does not have a reporting requirement and that can be of great help to students who have experienced sexual assault. The web address is [http://www.wgac.colostate.edu/need-help-support](http://www.wgac.colostate.edu/need-help-support).
Source: [http://oeo.colostate.edu/title-ix-sexual-assault](http://oeo.colostate.edu/title-ix-sexual-assault)

i. Non-Discrimination Statement

j. Library & Research Help
The CSU Libraries Help Desk provides research and technical assistance either in person at Morgan Library or by phone at 970-491-1841. Jocelyn Boice is the librarian supporting this course. Contact her by email at jocelyn.boice@colostate.edu or by phone at 970-491-3882 to ask questions or set up an appointment for in-depth research help.
Class Schedule
CLASS SCHEDULE IS SUBJECT TO CHANGE.

Week 1
- Tu – 01/19: Introduction
- Th – 01/21: Plate tectonics and coastlines

Week 2
- Tu – 01/26: Coastlines: Works in progress
- Th – 01/28: Homework 1: Types of Coasts (5%)

Week 3
- Tu – 02/02: Homework 1: Types of Coasts (5%) (continued)
- Th – 02/04: Ocean circulation and ocean density structure (upwelling and downwelling)

Week 4
- Tu – 02/09: Lecture: Earth’s radiation balance
- Th – 02/11: Lecture: Greenhouse Gases

Week 5
- Tu – 02/16: Homework 2: Direct and Indirect Pressures on Coastal Regions (10%)
- Th – 02/18: Homework 2: Direct and Indirect Pressures on Coastal Regions (10%)

Week 6
- Tu – 02/23: Atmospheric driven changes
  - Effects on two very different ecosystems: corals and sea-ice ecosystems
- Th – 02/25: Building protective barriers

Week 7
- Tu – 03/01: Dispersion across ocean basins via gyres: effects on coastal environments (including the effects of plastic pollution on the ecosystems)
- Th – 03/03 Sea-level rise

Week 8
- Tu – 03/08: Midterm Exam (in class)
- Th – 03/10: Ocean Acidification and the effect on coastal organisms

SPRING RECESS

Week 9
- Tu – 03/22: Lecture continued, Homework 3: Coastal ecosystems (5%)
- Th – 03/24: Homework 3: Coastal ecosystems (continued)

Week 10
- Tu – 03/29: Ocean Film Fest
- Th – 03/31: Ocean Film Fest

Week 11
- Tu – 04/05: Homework 4: Where the River meets the Sea (10%)
- Th – 04/07: Homework 4 (continued)
Week 12
- Tu – 04/12: Ecosystem fragmentation
- Th – 04/14: Loss of Coastal habitats

Week 13
- Tu – 04/19: Invasive species
- Th – 04/14: Guest speaker

Week 14
- Tu – 04/19: Eutrophication and hypoxia (take home Exam 2, due on Fri, 04/22 at 10PM)
- Th – 04/21: Coral reef resilience / Marine defaunation

Week 15
- Tu – 04/26: Chlorinated hydrocarbons and petroleum hydrocarbons
- Th – 04/28: Marine light pollution

Week 16
- Tu – 05/03: Student Presentations
- Th – 05/05: Student Presentations

Final: THURSDAY 05/12: 2:00-4:00 Student Presentations and FINAL PAPER DUE AT END OF CLASS (HARDCOPY) E-COPY via email by 11:59PM

Hope you will enjoy the class
Have a successful semester