

EARS 3 Elementary Oceanography (*The Blue Planet*)

Spring, 2013

Instructor: Erich Osterberg, 205 Fairchild Hall, 646-1096, Crich.C.Osterberg@dartmouth.edu

Teaching Assistant(s): Danielle Niu, 405 Fairchild Hall, Danielle.J.Niu.GR@dartmouth.edu

Jie Yang, 206 Fairchild Hall, Jie.Yang.GR@dartmouth.edu

Class Meeting Time: Mon/Wed/Fri 11:15 AM to 12:20 PM

X-hours: Every Tue 12:00 to 12:50 – ****We will use ALL X hours!****

Classroom: Life Science Center, room 100 (Oopik Auditorium)

Office Hours: *Check Blackboard for latest office hours*

Class Web Site: <http://blackboard.dartmouth.edu>

Course description & learning objectives:

The ocean covers approximately 70 percent of the Earth's surface, yet we still know very little about the marine environment...it is our final (Earthbound) frontier. *Oceanography* is the study of the marine environment and represents one of the original 'environmental sciences' in that it draws upon the collaborative expertise of chemists, biologists, physicists and geologists alike. In this course, we will introduce this multidisciplinary approach.

We will learn about interactions between the physical, biological, and geological processes in the sea, and understand the complexity of the sea as a natural system. We will learn about the sea's resources, its contribution to global climate, its significance as a recording of Earth's environmental history, and its importance as the likely setting for life's beginnings.

During this course, you will learn the following specific key concepts and skills at an introductory level:

- Geologic time and geologic scale;
- Earth's origins;
- Use of maps (or, in marine settings, charts) and spatial data;
- The process of science and the evolution of scientific concepts;
- The Earth (especially the ocean!) as a dynamic system of physical, chemical and biological interactions;
- The importance of natural resources and the physical environment on the evolution of life (and *vice versa*);
- The role of uncertainty in our understanding of Earth processes, resources and hazards.

Prerequisites:

There are no prerequisites.

Required Text:

Tom Garrison, 2012, *OCEANOGRAPHY: An Invitation to Marine Science*, 8th ed.

Course Requirements and Grading:

Class participation (10% of grade): This will be calculated solely based on the number of in-class exercises you complete. **Each student receives 3 “free passes”** to miss class for any reason they deem necessary – illness, sports or performance conflict, family commitment, job interviews, etc. There is **no need** to contact me about absences unless there are special circumstances (extended absences).

Quizzes (10% of grade): There will be 2 quizzes during the term on the reading and lectures. This is to help you prepare for the exams by testing your knowledge and giving you incentive to keep up with the reading.

Homework Assignments (30% of grade): There will be five homework assignments throughout the term. You will have at least 1 week to complete each assignment.

Midterm Exam (25% of grade): 50 min during **X-Hour on Tuesday, April 16** from 12-12:50 pm, covers material from the beginning of the course up to the exam.

Final Exam (25% of grade): 1 hr exam at **on Monday May 13**.

Course Grading Scale: Letter grades will be assigned to your cumulative total points according to the following:

A \geq 95.00 > A- \geq 90.00 > B+ \geq 85.00 > B \geq 80.00 > B- \geq 75.00 > C+ \geq 70.00 > C \geq 65.00 etc.

I must adhere to these cutoffs to be fair to all students. If you have a cumulative average grade of 89.99% at the end of the term, then you will get a B+.

Grading Questions and Corrections: Despite our best efforts, grading errors are likely with 150 students in the class. Please review all of your homework, quiz, and exam grades for errors and inconsistencies, and ask the TAs or me any questions within **1 week** after each is returned.

Unexpectedly Missing Quizzes and Exams: If you have to miss a quiz or exam, **YOU MUST CONTACT ME BEFORE THE QUIZ OR EXAM STARTS** to explain your absence and make plans for taking the exam/quiz at the next available time. Email (erich.c.osterberg@dartmouth.edu) and telephone (603-646-1096) are ways to contact me. If I do not answer the phone, **leave a message!** You may be expected to provide a letter from your doctor, dean, family member (etc.) explaining that your absence was justified.

*****FAILURE TO CONTACT ME BEFORE THE EXAM/QUIZ OR FAILURE TO PROVIDE A VALID REASON FOR YOUR ABSENCE MAY RESULT IN YOU RECEIVING A 0% ON THE EXAM OR QUIZ*****

NO make-up exams/quizzes will be available without a valid reason for absence.

Planned Absences during Quizzes or Exams: If you know ahead of time that you will be absent from a quiz or exam (e.g. for a college-affiliated extra-curricular activity, job interview, etc.), speak with me about it **as soon as you know** so that accommodations can be made. In general, my policy is to allow students to take exams and quizzes **early** for a planned absence, but not to take it late unless there are special circumstances.

Late Homework Assignments: Homework assignments are due at 5 pm on the due date. You should turn in your assignments in the EARS 3 drop box on the second floor of Fairchild Hall. 5% will be deducted for each day that an assignment is late, unless you discuss the situation with me **prior** to the original due date. For example, an assignment due on Wednesday would be deducted 5% if turned in between 5 pm Wednesday and 5 pm Thursday, and 10% if turned in between 5 pm Thursday and 5 pm Friday, etc. If you are unable to complete an assignment on time due to illness or other personal reasons, you may be eligible to have this penalty waived. You are encouraged to talk to me **as soon as possible**, and if necessary, meet with your Dean to discuss your situation.

Disability-Related Accommodations: Students with disabilities enrolled in this course and who may need disability-related academic adjustments and services are encouraged to see me privately as early as possible in the term. Students requiring disability-related academic adjustments and services **MUST** consult the Student Accessibility Services office (301 Collis Student Center, 646-9900, student.accessibility.services@dartmouth.edu). Once SAS has authorized services, students must show the originally signed SAS Services and Consent Form and/or a letter on SAS letterhead to me. As a first step, if students have questions about whether they qualify to receive academic adjustments and services, they should contact the SAS office. All inquiries and discussions will remain confidential.

Religious Observances: If you have a religious observance that conflicts with your participation in this course, please meet with me **as early as possible** to discuss accommodations.

Academic Honor Principle: You should be aware of and conform to the Dartmouth Honor Code as expressed in the ORC. Any suspected Honor Principle Violations will be reported to the Dartmouth Committee on Standards (COS). For this course, be aware of the following:

- **Quizzes and Exams:** All work on quizzes and exams is your own.
- **Homeworks:** You are encouraged to discuss homework assignments in groups, but what you turn in must be written in your own words.
- **In-class assignments:** Writing someone's name on an in-class assignment sheet who is not actually in class that day **IS** an Honor Principle Violation and will be reported.
- **Plagiarism:** Be sure to cite all references in homework assignments.
- If you are unsure, please ask how the Honor Principle applies to this course.

EARS 3 Spring 2013 Schedule (subject to change)

Date	Day	Lecture	Topic	Chapter(s)	Assignments Due
25-Mar	mon	1	Introduction	1	
26-Mar	tues	2	History of oceanography	2	
27-Mar	wed	3	Oceanographic methods	2	
29-Mar	fri	4	Earth Origins & Age	1	
1-Apr	mon	5	Earth Structure	3	HW 1. Earth size, shape & structure
2-Apr	tues	6	Plate Tectonics	3	
3-Apr	wed	7	Geography of the sea	4	
5-Apr	fri	8	Water & Ocean structure 1	6	
8-Apr	mon	9	Water & Ocean structure 2	6, 7	HW 2. Seafloor spreading
9-Apr	tues	10	Atmospheric Circulation 1	8	

10-Apr	wed	11	Quiz #1, & Atmospheric Circulation 2	8	Quiz 1 on Lect. 1-9
12-Apr	fri	12	Ocean Circulation 1	9	
15-Apr	mon	13	Ocean Circulation 2	9	HW 3. Coriolis effect
16-Apr	tues	14	MIDTERM EXAM		
17-Apr	wed	15	Waves	10	
19-Apr	fri	16	Tides	11	
22-Apr	mon	17	Life in the Sea 1	13-16	
23-Apr	tues	18	Life in the Sea 2	13-16	
24-Apr	wed	19	Ocean Chemistry	7	HW 4. Atlantic Ocean hydrography
26-Apr	fri	20	Marine Sediments 1	5	
29-Apr	mon	21	Marine Sediments 2	5	
30-Apr	tues	22	Coasts 1	12	
1-May	wed	23	Quiz #2, & Coasts 2	12	Quiz 2 on Lect. 10-21
3-May	fri	24	Ocean & Climate 1	TBD	
6-May	mon	25	Ocean & Climate 2	TBD	HW 5. Beaches
7-May	tues	26	Marine Resources 1	17	
8-May	wed	27	The Ocean Environment	18	
10-May	fri	28	Summary/Review		
13-May	mon	FINAL	FINAL EXAM		