

Oceanography

GEOG 2500, Spring 2012, 3cr, McKay C284

Section 1:TR 9:30-10:45; Lab F 9:30-10:45; Section 2:TR 12:30-1:45; Lab F 12:30-1:45

Dr. Elizabeth Gordon; GeoPhysical Sciences

Welcome to Oceanography! With rapid human population growth and environmental change, demands on our ocean continue to increase. The future health of the ocean requires an educated populace to make informed decisions to effectively manage this resource and protect organisms that inhabit it. The overall goals of the course are for you to 1) understand fundamental scientific principles that describe natural ocean processes, 2) identify the connection between the ocean and your daily life, and 3) recognize the impact of human activities on ocean health. This requires learning the basic principles of marine geology, marine chemistry, physical oceanography, and biological oceanography. Time will also be devoted to the science and policies that surround major marine environmental issues.

By the end of this course, you should understand:

- Plate tectonics and its role in shaping ocean basins.
- Classification and distribution of marine sediments.
- Chemical and physical properties of seawater.
- The role of the ocean in regulating climate.
- Physical and chemical processes that influence the distribution of marine life.
- Major threats facing the marine environment.

This course satisfies the Quantitative Lab Science requirement for LA&S. To meet those requirements, you must demonstrate proficiency in quantification and problem-solving strategies, which includes:

- Using appropriate methods to collect data
- Analyzing, interpreting, and graphically presenting data
- Communicating scientific results and their implications

Course Information

My office (McKay C265) is located across the hall from our classroom. You can be certain to find me there during **office hours** (W10-11:30; F11-12:30), or you can arrange to meet me at a different time. Email (egordon3@fitchburgstate.edu) is the best way to communicate, but you can also call (978.665.3083) if necessary. A Blackboard site (blackboard.fitchburgstate.edu) will also be maintained - you'll find announcements, course documents, lecture notes, readings, resources, and grades posted there.

The **textbook** for this course is: *Essentials of Oceanography*, Trujillo and Thurman, Tenth Edition, 2011. Pearson Prentice Hall Publishers. ISBN 978-0-321-66812-7

You will need a **calculator** that can perform basic scientific functions; cell phone calculators are not allowed. You will also need a laptop for several of our labs.

Ensuring your success

Follow these basic steps in order to achieve course goals.

Attend class every day

Prepare for class by completing readings and assigned material on time

Participate in class discussion and **engage** in learning activities

Review course materials along the way

Your responsibilities

Graded learning activities (20%)

We will work through numerous exercises, both during class and to be completed on your own. Over the course of the semester, several of the in-class activities will be collected and will count toward your overall course grade. **You must be in attendance to receive credit for activities completed during class**, but your lowest two grades will be dropped to allow for illness and emergencies. Several assignments will be completed on your own time. All assignments must be submitted by the deadline; no late work will be accepted.

Some assignments include [*The Math You Need When You Need It \(TMYN\)*](#) modules. TMYN is designed to promote your success in the quantitative aspects of this course by reviewing some key math concepts and placing those in a geoscience context. We will work through the first module together, but the remainder will be completed outside class time. **You must complete the assigned module by the deadline, which will be scheduled immediately prior to their use in class.** Your module assessments will count toward your total assignment score.

Labs (20%)

Lab exercises will often be completed within the time allotted, but you will submit a type-written lab report that includes results, graphs, and answers to lab questions. Detailed calculations may be hand-written. You will have one week to complete each lab - late labs will not be accepted. Make-up labs are not scheduled, but the lowest lab grade will be dropped. **You must be in attendance and arrive on time to receive credit for the lab.** Given that this course satisfies Fitchburg State's lab science requirement, **if you are tardy or absent to more than three labs, you will not pass the course.**

Tests (40%)

Three tests will be given during the semester, and will include topics from class discussion, assigned readings, and learning exercises. The lowest test grade will be dropped. Make-up, essay tests will be allowed for *documented* emergency situations only, unless prior arrangements have been made.

Final exam (20%)

Everyone must take the cumulative final exam during the time designated by the Registrar.

Field trip

A field trip to Plum Island will be scheduled in April.

Tentative schedule

Week	Topic	Lab	TMYN module
Week 1	Introduction to the study of the ocean	Scientific process	
Week 2	Earth structure and seafloor spreading	Seafloor spreading, part 1	Density; Rates; Best fit line
Week 3	Plate tectonics; bathymetry	Seafloor spreading, part 2	Unit conversion
Week 4	Sediments; Seawater chemistry	The seafloor and sediments	Rearranging equations
Week 5	Physical properties of seawater	Properties of seawater	
Week 6	Deep ocean circulation	Ocean conveyor	
Week 7	Ocean-atmosphere interactions	Hurricanes and El Nino	Unit conversion, revisited
Week 8	Surface circulation	Wind-driven currents	
Week 9	Waves	Waves	Rates, Rearranging equations, revisited
Week 10	Tides, Coastal processes	Coastal oceanography	
Week 11	Marine Ecology	Corals	
Week 12	Biological productivity	Productivity patterns	
Week 13	Coastal habitats	Dead zone	
Week 14	Ocean resources	Ocean energy	Unit conversions, revisited
Week 15	Ocean threats	Oil spill	
Week 16	Climate change	Ocean acidification	

Classroom policies

Technology

In accordance with the University's Policy on Classroom Decorum, **mutual respect and common courtesy** will be the guiding principles in the classroom. To achieve this, everyone will **turn off and store cell phones** and other electronic devices for the duration of every class.

Attendance

There are several reasons that you will want to attend class, including:

It improves your **learning**.

Credit for classroom graded work will only be earned if you are there to complete it.

You **must attend labs** in order to pass the course.

Attendance is therefore expected for lecture, and required for labs. Please communicate with me about absences, whether due to planned or emergency situations.

Academic integrity

All Fitchburg State students are held to the highest standards of [academic integrity](#). Although much of our class will be group-based learning, **credit will only be earned for work that is your own**. Note that academic dishonesty includes cheating, fabrication, plagiarism, and facilitating dishonesty; any student who violates standards for academic integrity by engaging in such activities will be subject to the appropriate disciplinary action.

Learning accommodations

Any student with a need for learning accommodations should make arrangements through [Disability Services](#) (665-3427) early in the semester. Please discuss these arrangements with me as soon as possible to ensure appropriate planning.

Sustainable practices

[Recycling](#) bins, which are located in the classroom, should be used for all appropriate items (including paper, soda cans, plastic bottles, etc). Please discard non-recyclable items (e.g., Styrofoam) in the wastebasket. Consider reducing your use of non-reusable items overall.

Grading

Grades will be assigned in accordance with Fitchburg State's grading policy:

<i>Points earned</i>	<i>Grade</i>	83 - 85	3.0	69 - 70	1.7
95 - 100	4.0	80 - 82	2.7	67 - 68	1.5
92 - 94	3.7	77 - 79	2.5	64 - 66	1.3
89 - 91	3.5	74 - 76	2.3	60 - 63	1.0
86 - 88	3.3	71 - 73	2.0	0 - 59	0.0

Grades that fall between intervals will be rounded to the higher number.