

Oceanography (Geology 318) Syllabus and readings.

Where: 217 Harrington

When: 9:10 MWF

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Text: Oceanography an invitation to marine science (sixth edition), By Tom Garrison. Thompson, Belmont CA. (2007)

Introduction: The ocean is a dynamic, complex and interesting thing, and there is much that we still have yet to learn about it. It is a place of very active research on many fronts- from geophysics to microbiology, from climate change to environmental modification. I hope that you will find the ocean to be as fascinating as I do.

Oceanography is the study of the oceans, and includes geology, chemistry, physics, geography and biology of all the world's oceans and seas. The goal of this class is to understand the components of the ocean/atmosphere system, and how they interact. We will begin the course by learning about plate tectonics, and the history and structure of the ocean basins. Once we establish this foundation, we will add water to the system- examining the properties of water, its chemistry, currents, etc.. The section on water, circulation, waves, tides, and the coast will be followed by a survey of life in the oceans, including the use of marine communities as a resource, and the benefits and problems that arise from that use.

Grading/course structure/readings

We will follow the text in terms of structure, and cover all the chapters in order- but we are learning about the oceans, which cannot be completely captured in a short book- no matter how good it is. Therefore, I will sometimes go beyond what is in the text, and supplement chosen topics with some short problem sets taken from the Open University series on oceanography.

There will be three written exams during the course of the semester:

The first will cover chapters 1-5 in your text- essentially geological in nature

The second exam will cover chapters 6-12,

The third exam will cover life in the oceans, as well as environmental issues and global warming- the remainder of the book.

This is how the exams will work- The first section will be short answer, followed by some medium-length questions, followed by a couple of longer questions. To focus your studying, I will give you the longer questions in advance, plus a few extra.

The exams account for 75% of your final grade

Tentative dates for the exams:

Exam 1- Feb 23, Exam 2- March April 11, Exam 3- May 9th. These dates will be adjusted to the rate at which we cover the material!

Term Paper (20%)

In addition to the exams, there will be a short, 5-7 page term paper, due May 1. When I mean 5-7 pages, I mean 5-7 pages. I will NOT read beyond the 7 page limit! The term paper will require you to delve into the primary literature, and apply what you learn to address an oceanographic environmental or climate change concern, in the form of a plan of action, or research proposal. I will provide more information on the paper in a week or two, including a timetable; there will be a nested set of deadlines to a) choose a topic (5% of paper grade), b) turn in an outline and reference list (15% of paper grade), c) the paper (70% of paper grade), and a presentation (10 minutes, 10% of your paper grade). I will review a rough draft up to a week before the final deadline for the paper, for those that request it.

Other Stuff (5%)

There is a field trip to Shedd Aquarium in Chicago, tentatively scheduled for the 24th of February. We will leave in the morning, come home the same evening, spending a few hours at the Aquarium, then head home.

We will have homework- small problem sets that we will go over in class, as a group, working with charts, T-S diagrams, but nothing too involved.

Lecture schedule (may/will be adjusted)

<u>Week of</u>	<u>Topics/(Chapters)</u>
January 29	History of Oceanography. Earth History (1&2)
February 5	Plate Tectonics, Earth structure, Geology (3)
February 12	Continental Margins, Ocean Basins (4)
February 19	Sediments, Exam 1 (5)
February 26	Water and Ocean Structure (6)
March 5	Ocean Chemistry (7)
March 12	SPRING BREAK!!!!!!
March 26	Circulation of the Oceans and Atmosphere (8&9)
April 2	Waves and Tides (10&11)
April 9	Coasts, Exam 2 , Life in the Ocean (12 &13)
April 16	Life, Productivity in the oceans (13&14)
April 23	Animals, Communities, Resources (15-17)
April 30	Environmental Concerns, Climate change (18+)
May 7	Presentations, Final Exam.....