

GEOL 3301: Physical Oceanography

Spring 2011

MWF: 11:00 am – 11:50 am

Sid Richardson 230

Instructor

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Office Hours

Mon/Wed/Fri 10:00 am – 11:00 am
Tue/Thu 9:30 am – 10:30 am
Tue 1:00 pm – 5:00 pm
Thu 1:00 pm – 2:00 pm

Textbook

Introduction to the World's Oceans
Keith A. Sverdrup
E. Virginia Armbrust
10th Edition

Course Description

This course covers the fundamental concepts of Physical Oceanography. As designed we will focus our time on the origin of the world's oceans, the role of the ocean system in the hydrosphere, the interaction of the oceans and atmosphere, the processes of waves, tides, and currents, coastal settings and environmental concerns. This course is a mix of traditional lecture, video, and hands-on laboratory-style activities.

Expected Learning Outcomes

Any student successfully completing this course should be able:

- Explain and apply the scientific method.
- Discuss the history and future direction of oceanography.
- Explain the process of plate tectonics and discuss its importance to understanding the geography of the ocean basin.
- Explain the processes behind waves, currents, and tides.
- Link the ocean processes (above) with ocean chemistry and interactions with the atmosphere and hydrosphere.
- Link humans and human activities along coastlines to active ocean processes.

Assessment of Expected Learning Outcomes

The success of a student in completing the expected learning outcomes for the course will be evaluated formally by graded activities, exams, and projects (see below), and informally by pre- and post-course surveys and observation of lab and group work.

Determination of Course Grade

The grade earned in this course will be determined by the student's success in completing the following components of course work. The course grade is determined based points earned versus the points available for the semester resulting in a percentage. The distribution of points among course components is found below:

Component	Number	Points Each	Total Points	Approx. Relative %
Examinations	3	100	300	58% of Grade
Lab/Video Activities	8	15	120	23% of Grade
Group Presentation	1	100	<u>100</u>	<u>19% of Grade</u>
			520 Total	100% Total

The points needed to earn a specific letter grade in the course can be found below:

A (468 points or more) B (416-467 points) C (364-415 points) D (312-363 points) F (311 points or less)

Important: At the end of the semester, the grade a student has earned is based on the number of points the student has earned. Any student asking for a grade bump is out of line. Asking for a grade bump, is asking for special privileges, and is extremely unethical. The instructor will recalculate grades, but will not bump grades. If a student asks for a grade bump the request will be ignored.

- Examinations – Examinations in this course consist of 50 multiple choice questions and a short answer essay (5-15 sentences) chosen from a selection of three possible questions. Examinations will be given on the date scheduled on this syllabus (**February, 14th, 2011**, **March 28th, 2011**, and **May 11th, 2011**). Make plans now, do not schedule anything for exam days, and change any plans now. Aside from Doctor documented illness or family emergency there will be no excuse excepted for a missed exam. If you have an excused miss for an exam you will be given an alternate exam that may vary slightly in difficulty from the original exam given.
- Group Presentation – Approximately mid-way through the semester the students will be split into groups of three (one or two groups of two are possible). The instructor will provide selected chapters from [Ocean's End: Travels through](#)

Endangered Seas by Colin Woodard, 2000. Each group will be responsible for one of eight chapters from this book. The group will have the responsibility of reading the chapter, preparing a 10 to 15 minute PowerPoint presentation on the topic, and presenting to the class at the end of the semester. Each student must participate in reading the passage, preparing the presentation, and giving the presentation. On the project assignment day groups will be given their presentation date according to their chapter (see course schedule). Students will receive a grade based on 33% the instructor evaluation of the presentation, 33% the class evaluation of the presentation, and 33% self and group assessment of participation in project. Evaluations will be provided with the grade on the project. All evaluation materials will be provided on the project assignment day so that students will know how they will be graded.

- Lab Activities – Throughout the semester we will complete hands-on lab activities and view videos that are designed to supplement the material learned in the lecture portion of the course. By the end of the semester the student will complete approximately 8 lab and video assignments for a grade. In most cases, these assignments will be due on the same day that the activity is completed in the classroom, in cases where it is not the due date will be supplied (see course schedule for basic due dates).

University Policies

The university has specific policies on attendance, the use of electronic equipment in the classroom, students with disabilities, and official university communications, as well as an official calendar for the semester. See attached sheet of University Policies.

DATE	TOPIC/ACTIVITY	PREPARATION	DUE DATES
01/17/2011	No Class – MLK Jr. Holiday	NA	
01/19/2011	Introduction to Science	Handouts	
01/21/2011	<i>Lab Activity: The Scientific Method and Observation</i>	Handouts	
01/24/2011	Introduction to Oceanography	Chapter 1	Lab Due
01/26/2011	History of Oceanography: Explorers Behaving Badly	Chapter 1	
01/28/2011	History of Oceanography: Modern Oceanography	Chapter 1	
01/31/2011	Origin of the Universe, Earth, Moon, and Oceans	Chapter 2	
02/02/2011	Origin of the Universe, Earth, Moon, and Oceans	Chapter 2	
02/04/2011	<i>The Universe: “Beyond the Big Bang”</i>	NA	
02/07/2011	Plate Tectonics and Ocean Basins	Chapter 3	Write-Up Due
02/09/2011	Plate Tectonics and Ocean Basins	Chapter 3	
02/11/2011	Plate Tectonics and Ocean Basins	Chapter 3	
02/14/2011	Examination Number 1	Chapters 1-3	
02/16/2011	The World Ocean and Ocean Basins	Chapter 4	
02/18/2011	<i>How the Earth was Made: “The Deepest Place on Earth”</i>	NA	
02/21/2011	<i>Lab Activity: Common Minerals in Oceanic Rocks</i>	Handouts	
02/23/2011	<i>Lab Activity: Common Oceanic Rocks</i>	Handouts	
02/25/2011	Weird World of Water	Chapter 5	Labs Due
02/28/2011	Weird World of Water	Chapter 5	
03/02/2011	A Sea of Chemicals	Chapter 6	
03/04/2011	A Sea of Chemicals	Chapter 6	
03/07/2011	Links with the Atmosphere	Chapter 7	
03/09/2011	Links with the Atmosphere	Chapter 7	
03/11/2011	<i>Presentation Assignments</i>	Handouts	
03/14/2011	No Class – Spring Break	NA	
03/16/2011	No Class – Spring Break	NA	
03/18/2011	No Class – Spring Break	NA	
03/21/2011	Making Waves	Chapter 10	
03/23/2011	Making Waves	Chapter 10	
03/25/2011	Review Period	Chapters 4-7, 10	
03/28/2011	Examination Number 2	Chapters 4-7, 10	
03/30/2011	Surface Currents	Chapter 8	
04/01/2011	Surface Currents	Chapter 8	
04/04/2011	Deep Currents	Chapter 9	
04/06/2011	Deep Currents	Chapter 9	
04/08/2011	Ever Changing Tides	Chapter 11	

*Note: Due to unforeseen events adjustments may need to be made to the schedule throughout the semester.

DATE	TOPIC/ACTIVITY	PREPARATION	DUE DATES
04/11/2011	Ever Changing Tides	Chapter 11	
04/13/2011	Coastlines	Chapter 12	
04/15/2011	Coastlines	Chapter 12	
04/18/2011	Erosion, Deposition, and Sedimentation	Chapter 4	
04/20/2011	<i>Lab Activity – Beach Sands of the United States</i>	<i>Handouts</i>	
04/22/2011	No Class – Easter Holiday	NA	
04/25/2011	<i>Lab Activity – Topographic Map Basics</i>	<i>Handouts</i>	
04/27/2011	<i>Lab Activity – Features of Submergent and Emergent Coastlines</i>	<i>Handouts</i>	
04/29/2011	“Dead Seas” and “Ocean Blues” Presentations	Ocean’s End	Labs Due
05/02/2011	“Run on the Banks” and “Muddied Waters” Presentations	Ocean’s End	
05/04/2011	“Fall of the Magic Kingdom” and “Paradise Lost” Presentations	Ocean’s End	
05/06/2011	“Message from the Ice” and “Sea Change” Presentations	Ocean’s End	
05/11/2011	Final Exam (10:30 am to 12:20 pm)		

**Note: Due to unforeseen events adjustments may need to be made to the schedule throughout the semester.*