

# OCEANOGRAPHY

**EARTH SCIENCES 1- Spring 2016**  
**Gary Griggs**  
**Thimann Lecture Hall 3 TuTh 8-9:45**

## **COURSE OBJECTIVES**

Oceanography is designed to provide a broad introduction to the origin and evolution of the earth and its ocean basins, as well as the physical features and processes affecting the ocean, its edges, and its seafloor. Ocean energy resources, climate change and sea-level rise, asteroid impacts and faunal extinctions, marine waste disposal and pollution, ocean acidification, El Niño and coastal hazards, and desalination are all topics to be covered.

This course is distinct from but complimentary to Marine Science 1, which has a dominantly marine biological focus. Both courses can be taken for credit in any order. Overlap should be minimal.

## **CLASS FORMAT AND REQUIREMENTS**

Oceanography consists of 2 weekly lectures and a required one-hour weekly lab/discussion section. Your grade will be based on three exams, each counting for 1/4 of your grade and a weekly lab assignment that will count for 1/4 of your grade. The exams are scheduled on the following outline and everyone is expected to be there at the scheduled times, unless there is some unresolvable emergency and I have been informed prior to the exam.

The exams will be based on lectures. Due to skyrocketing cost of textbooks, I have gone with an E-Textbook for the first time, which is about 1/3 the cost of a hard copy book. I will also put several copies on Reserve in the Science Library. There are also many used copies of the text, as well as older editions of this and other oceanography books available. Appropriate chapters in the following books that I have put on reserve are listed by lecture in the syllabus below.

*Oceanography- An Invitation to Marine Science*, Tom Garrison and Robert Ellis, 9<sup>th</sup> Edition. E version in Bay Tree Bookstore. Hard Copy of: *Oceanography- An Invitation to Marine Science*, or *Essentials of Oceanography* by Tom Garrison, On reserve

- **Bring pink, full-page Scantron forms for each exam.**
- **Failure to take any of the exams will probably result in your not passing the course.**

## **INSTRUCTOR**

Gary Griggs: Professor of Earth & Planetary Sciences- Office E&MS A-317  
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## OCEANOGRAPHY- CLASS OUTLINE

### Spring Quarter 2016

*Oceanography- An Invitation to Marine Science*, Tom Garrison & Robert Ellis- E book at Bay Tree and Hard Copies of earlier editions of Garrison on reserve in Science Library

<u>DATE</u>	<u>TOPIC</u>	<u>CHAPTER IN TEXT</u>
Mar 29	Introduction: History and development of science of Oceanography;	G 1-2
Mar 31	Exploring the Ocean Floor; Origin of earth & oceans;	G 1-2
Apr 5	Continents and Oceans; Earth structure	G 3-4
Apr 7	Continental drift to Global tectonics- The evolution of a revolution	G 3-4
Apr 12	Global tectonics; Sea floorprovinces:	G 3-4
Apr 14	Submarine canyons; the deep-sea floor: mountains, plains, trenches, fracture zones, volcanoes & hotspots	G 4
<b>Apr 19</b>	Sea floor sediments; Paleoceanography and earth history from sediment record <b>9:00 am First Exam- Pink Scantron</b>	G 5
Apr 21	The water in the ocean: Ocean structure and Composition	G 6-7
Apr 26	Atmospheric Circulation	G 8
Apr 28	Ocean circulation	G 9
May 3	Waves: sea, swell and surf; Tsunamis	G 10
May 5	Tides	G 11
May 10	Coasts <b>9:00 am Second Exam - Pink Scantron</b>	G12

May 12	Beaches	G12
May 17	Pacific Decadal Oscillation, ENSO/El Nino	G266-271
May 19	Climate Change, Global Warming and Sea-Level Rise	G527-539
May 24	Coastal retreat and responses	G362-369
May 26	Marine Mineral and Energy Resources	G17
May 31	Marine Pollution	G18
June 2	Looking to the Future: Global ocean issues	G17/18

**Final Examination Tue. June 7 4-7:00 pm Bring Pink Scantron**

**OCEANOGRAPHY - LAB SCHEDULE**

WEEK	TOPIC	DATES
1	Bathymetric Charts and Maps	Apr. 4-8
2	Paleomagnetism	Apr. 11-15
3	Plate Tectonics	Apr. 18-22
4	Marine Sediments & Paleoceanography	Apr. 25-29
5	Waves	May 2-6
6	Beaches and Beach Processes	May 9-13
7	Sea-Level Rise	May 16-20
8	Field Assignment-Coast Walk	May 23-27