

OCEA 112 Introduction to Oceanography, Cuyamaca College

Fall Semester 2009, Section 4605

Monday and Wednesday, 12:30 – 1:45 pm, Room F608

Introduction to Oceanography will give you an overview of the physical, chemical and biological systems of the world's oceans. The oceans are far too complex to be fully understood in a semester (or even in a lifetime), but when you finish this course, you will have an introductory-level working knowledge of them.

Instructor

Dr. Duncan McGehee

Office: F303

Phone: 619-660-4242

Home phone: 619-298-4856. Please don't call after 10 pm, or before 7 am.

email: duncan.mcgehee@gcccd.edu, Website: www.cuyamaca.edu/duncan.mcgehee

Office Hours: MW 5 - 6 pm, T 6 - 7 pm, W 2 - 3 pm, Th 12 - 1 pm, or by appointment

Units and Prerequisites

3 units. No prerequisites.

Text

Required: *Essentials of Oceanography*, 9th edition, Alan Trujillo and Harold Thurman, 2008, Prentice-Hall, ISBN 0-13-240122-3.

Grading

A: 90 - 100

B: 80 - 89.9999

C: 70 - 79.9999

D: 60 - 69.9999

F: < 60

Homework	15%
Midterm Examination 1	20%
Midterm Examination 2	20%
Final Examination	35%
Field Trip or Term Paper	10%
Field Trip 2 (extra credit)	5%

Note on grades:

There will be no make-up exams. If you MUST miss an exam, you MUST let me know BEFORE the exam (or bring a note from the police officer investigating the accident). If you do this, your final will be worth 55% of your grade. If you don't, you will receive a zero on the exam. If you miss both midterm exams, the second exam will receive a zero. If you miss the final exam, you will receive a zero for it.

Policies

- 1) Cheating. If I think you are cheating on an exam:
 - a) You will get a zero for that exam
 - b) I will invite you to withdraw from the class
- 2) Cell phones must be off before class begins. This includes text messages transmitted and received.
- 3) In this class we will be discussing current and sometimes controversial topics. It is vital to the free flow of information that all discussion remain courteous and respectful.

Important Dates

4 September: Final day to add classes, or to drop without a 'W'.

12 November: Final day to drop classes.

This course adheres to policies outlined in the Cuyamaca College Catalog. For further information, please see the section of the catalog entitled *Academic Policies*.

subject to minor changes -

OCEA 112 Introduction to Oceanography, Cuyamaca College

Fall Semester 2009, Section 4605

Monday and Wednesday, 12:30 – 1:45 pm, Room F608

Tentative schedule

Lesson	Date	Topic	Reading (BEFORE class)
1	24 Aug	Introduction, Course Overview	
2	26 Aug	Earth Origins	Ch 1
3	31 Aug	Plate Tectonics I	Ch 2
4	2 Sept	Plate Tectonics II	
	7 Sep	Labor Day	
5	9 Sep	Marine Provinces	Ch 3
6	14 Sep	Marine Sediments I	Ch 4
7	16 Sep	Marine Sediments II	
8	21 Sep	Seawater Chemistry and Physics I	Ch 5
9	23 Sep	Seawater Chemistry and Physics II	
10	28 Sep	History of Oceanography OR Review	Ch 1
	30 Sep	Midterm Examination 1	
11	5 Oct	Air-Sea Interaction I	Ch 6
12	7 Oct	Air-Sea Interaction II	
13	12 Oct	Oceanic Circulation I	Ch 7
14	14 Oct	Oceanic Circulation II	
15	19 Oct	Waves I	Ch 8
16	21 Oct	Waves II	
17	26 Oct	Tides I	Ch 9
18	28 Oct	Tides II	
	1 Nov (Sun)	Field Trip 1: Mission Bay Study	
19	2 Nov	Coastal Processes	Ch 10
	4 Nov	Midterm Examination 2	
20	9 Nov	Coastal Oceanography I	Ch 11
21	11 Nov	Coastal Oceanography II	
22	16 Nov	Marine Life I	Ch 12
23	18 Nov	Marine Life II	
24	23 Nov	Primary Productivity I	Ch 13
25	25 Nov	Primary Productivity II	
26	30 Nov	Pelagic Animals I	Ch 14
27	2 Dec	Pelagic Animals II	
28	7 Dec	Benthic Animals I	Ch 15
29	9 Dec	Benthic Animals II	
	13 Dec (Sun)	Field Trip 2: Point Loma Tide Pools	
	14 Dec (Mon)	Final Examination	

subject to minor changes -

OCEA 112 Introduction to Oceanography, Cuyamaca College

Fall Semester 2009, Section 4605

Monday and Wednesday, 12:30 – 1:45 pm, Room F608

Supplemental Reading List

These books are not required reading. Rather, they are books, some classics, some more recent, relating to the ocean. Note that the fiction list is fairly short whereas the list of true accounts is long. This is because when it comes to the ocean, fact usually makes a better story than fiction. Please feel free to propose additions to this list.

Scientific

Between Pacific Tides, Edward Ricketts, Jack Calvin, Joel Hedgpeth, and David Philips. This is the quintessential work on California sealife. It has been revised countless times. Ed Ricketts is the 'Doc' Ricketts of John Steinbeck's *Cannery Row*. We will take this book when we go tide-pooling.

Life Between the Tides, Jeffrey Brandon and Frank Rokop. This is a thinner book than *Between Pacific Tides*, but still an excellent reference. We will take this book when we go tide-pooling.

The Open Sea, Alistair Hardy. Written in two volumes, the first is about plankton, the second is about fish. This book is to the open ocean what *Between Pacific Tides* is to the California coast. In other words, it is a beautifully written description of the whole ecosystem and the various ways animals make their living.

Pacific Coast Subtidal Marine Invertebrates, Daniel Gotschall and Laurence Laurent. You can find this in any dive shop or book store. It is incomplete, but it has very good photos. I always have this in my dive bag. We will take it when we go tide-pooling.

Waves and Beaches, Willard Bascom. This is one of the more readable explanations of physical oceanography and the ocean's interaction with the land.

Pagoo, Holling C. Holling and illustrated by Lucille Holling. A children's book about the life of a hermit crab from birth to adulthood. Like many "children's books" this one will teach you more about life in the sea than most scientific literature.

True Accounts

Log from the Sea of Cortez. John Steinbeck. Description of a collecting trip in the Sea of Cortez with 'Doc' Ricketts. Written in true Steinbeck style, with an eye for the humanity of the protagonists, and some interesting marine biology too.

The Perfect Storm. Sebastian Junger. Incredible story of a recent storm that killed people on the Grand Banks fishing grounds. Wonderfully told. You may have seen the movie which was wimpy compared to the book (but it did have a good scene of a huge wave tumbling a ship).

Endurance: Shackleton's incredible voyage, Alfred Lansing. The story of Ernest Shackleton's Antarctic expedition. His ship got trapped in the ice. The saga that followed included a 1000 mile trip in open whaleboats, and an impossible trek across Elephant Island. Shackleton brought the whole crew back, without losing a single person.

Two Years Before the Mast, Richard Henry Dana. The experiences of a college-educated young man who, in the early 1800s, shipped aboard a trading vessel bound for California. A great description of what life was like on the tall ships. He spent quite a bit of time in San Diego, and gave a good description of our little town.

Sailing Alone Around the World, Joshua Slocum. They said it couldn't be done, back in 1895. Captain Slocum and his 34 foot sloop *Spray* took 3 years and 46,000 miles, but they showed that it could. This book is dramatic. Required reading for serious sailors.

Half Mile Down, William Beebe. William Beebe was the Jacques Cousteau of the 1920s and 30s. He inspired a generation of oceanographers with this description of the deep sea as seen from his bathysphere.

In the Heart of the Sea: The Tragedy of the Whaleship Essex, Nathaniel Philbrick. The Essex was rammed by a whale and almost sunk. The crew put to sea in open boats, and eventually were forced to resort to cannibalism. True stuff, and the basis for *Moby Dick*.

Of Whales and Men, Robert Robertson. We think of the Japanese and Russians as modern whale hunters, but the British and the Americans hunted whales into the 1960s. This is the story of a 20th century British whaling expedition. The book describes how whales are slaughtered in factory ships, but also has very interesting insights into human and cetacean nature.

Longitude, Dava Sobel. The story of one of the most perplexing problems of navigation: how to determine your location on the earth. Ships were wrecking and people were dying because of it. In the 1700s a huge reward was offered and finally won by the clockmaker John Harrison. This is a story of science, engineering, oceanography, and politics.

Krakatoa – The Day the World Exploded: August 27, 1883. Simon Winchester. Krakatoa was an island volcano near Java and Sumatra until it exploded, causing a tsunami over 100 feet high that killed over 30,000 people (a foreshadow of the tsunami of 2004, that struck in the same general area, and killed over 150,000). Later the island was found to have disappeared (but a new one has reappeared, and grows daily). The sound generated by the explosion is said to be the loudest ever heard by man since the dawn of civilization.

Fiction

Moby Dick, Herman Melville. You know the story. Read it. It's written in a 19th century style, which is a little hard for us in the 21st century, but you will not find a better description of the American whaling industry, what life was like on a whaling ship, and what whales are like.