

EARTH SCI-2206 “Principles of Oceanography”
GEC Category 2 Breadth Course in Natural Sciences/Physical Sciences

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Recommended Textbooks:

Essentials of Oceanography (6th Ed). By Tom Garrison. Any edition is equally fine. Two copies of older editions of the textbook will be on reserve in the Orton library.

GEC Natural Science Learning Goals and Objectives

Natural Science coursework fosters students’ understanding of the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world.

GEC Physical Science Expected Learning Outcomes

1. Students understand the basic facts, principles, theories and methods of modern science.
2. Students understand key events in the development of science and recognize that science is an evolving body of knowledge.
3. Students describe the inter-dependence of scientific and technological developments.
4. Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

OVERALL COURSE DESCRIPTION

This course is designed to provide a general overview of oceanography. It is constructed such that all students (irrespective of their major area of study) can learn about the oceans. The course will cover brief overviews of the four major areas of oceanography: marine chemistry (seawater chemistry and some aspects of biological oceanography), marine biology (marine ecosystems, reproductive biology, and behavioral ecology), marine geology (plate tectonics, sediments, and coastal geology), and physical oceanography (ocean and atmospheric circulation, and waves). The goal of the course is to provide students with a basic understanding of the oceans so that they can understand and evaluate current ocean topics in the media, have a foundation for future study in oceanography, and gain an appreciation for the complexity and beauty of the oceans. The course will follow the concepts presented in the textbook, enhance those concepts with additional information and personal experiences, and provide a framework for discussion about the larger implications and applications of those concepts.

The weekly lectures will be power point presentations of the various topics with some video clips, overheads, and other media used. The major graphs and figures (as power point files) will be posted for each lecture on Carmen (<https://carmen.osu.edu/>) prior to each lecture. These files are lecture outlines or guides, and not complete notes for the lecture. Students should take notes directly on their electronic or printed copies of the lecture slides. If you do not have power point or Adobe, Power point and Adobe viewers can be downloaded for free at <http://www.microsoft.com/download/en/details.aspx?id=6> and <http://get.adobe.com/reader/>, respectively. I will also periodically upload additional readings on the Carmen site, as well as post messages, important calendar dates, and reminders.

GRADING

Grading Scheme

Exam 1 – chemical oceanography	24%
Exam 2 – physical oceanography	24%
Exam 3 – biological oceanography	24%
Exam 4 – geological oceanography	24%
Ocean Science Literacy homework	4%

Exams are not graded on a curve. *Typical* letter grade ranges looks like this:

Letter	Grade Range	Letter	Grade Range
A	90-100	C+	65-69.9
A-	85-89.9	C	60-64.9
B+	80-84.9	C-	55-59.9
B	75-79.9	D	50-54.9
B-	70-74.9	F	<50

Exams: There will be three exams during the semester. The fourth exam will be scheduled during final exam week. The exams are not cumulative. Exam questions will only be drawn from materials and discussions presented in class. Exam questions can cover any material covered during lectures including calculations, graphs, tables, maps, definitions, animations, movies, etc. Exam Q&A review sessions will be held online using the Carmen discussion group. You are responsible for attending the midterm and final exams on the scheduled date and time. Please see me immediately regarding any extenuating circumstances that pertain to any exams.

Bonus points: Random attendance might be taken during the quarter to get an idea of who is regularly attending class. Up to 1 bonus points may be given to those attending lectures (that is a full point added to your final grade). The bonus point days will not be announced in advanced.

Oceanography song contest will be held on the last day of class. All lyrics must be about oceanography. The music may be original or existing (i.e., new words to a Madonna song). Poems that are song length are also eligible. One bonus point will be given to each contestant, and 2 bonus points to the winning song's solo or team members. Songs can be from an individual or by teams of up to a maximum of 5 people. The song must be submitted on a thumb drive as a video or audio file, or can be performed in class. All songs will be judged by the class to determine the winner.

EARTHSCI-2206 Class Schedule (subject to change)

Week	Topic	Chapter
1	Review of Syllabus, Facts about the Ocean Ocean Basins	2 4
2	Seawater Chemistry: properties of water Seawater Chemistry: dissolved gasses	6 6
3	Seawater Chemistry: pH and carbonate system (guest) Atmospheric circulation (guest)	6 7
4	Hurricanes, storms, and weather Ocean Science Literacy Homework #1 due EXAM 1 (History of Oce → Atmosphere Circ)	7
5	Ocean circulation I Ocean circulation II	8 8
6	ENSO Waves and Tsunamis	9
7	Tides and coasts Life in the Oceans Ocean Science Literacy Homework #2 due	10 12
8	EXAM 2 (Hurricanes → Tides and Coasts) Pelagic Communities	13
9	Nekton Coral Reefs	13 14
10	<i>SPRING BREAK</i> <i>SPRING BREAK</i>	
11	Benthos Fisheries	14
12	Sediments Ocean Science Literacy Homework #3 due EXAM 3 (Life in the Ocean - Fisheries)	5
13	Sediments II Paleoceanography	5 5.7
14	Carbon Cycle and Global Warming Marine Pollution	15.10 15
15	Marine Pollution II Marine Pollution III, Oceanography song contest Ocean Science Literacy Homework #4 due	15 15
FINAL EXAM	EXAM 4 (Sediments → end of Marine Pollution)	