

EARTH SCI-2206 “Principles of Oceanography” (Autumn 2014)

GEC Category 2 Breadth Course in Natural Sciences/Physical Sciences

Lecture: T Th 9:35am - 10:55pm, Hopkins Hall 0250

Instructors: Dr. Andréa G. Grottoli, Professor
329 Mendenhall, email: grottoli.1@osu.edu, phone: 292-5782

Office Hours: after lectures and by email

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 Natural Science Expected Learning Outcomes

1. Students understand the basic facts, principles, theories and methods of modern science.
2. Students learn key events in the history of science.
3. Students provide examples of the inter-dependence of scientific and technological developments.
4. Students discuss 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	25%
Exam 2 – physical oceanography	25%
Exam 3 – biological oceanography	25%
Exam 4 – geological oceanography	25%
Bonus Points	TBA

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. Any of the following type of questions may be given on an exam: multiple choice, fill in the blank, short answer, true or false. For example, you might be asked to plot a graph of temperature and salinity across depth in the ocean and describe what it means. Exam Q&A review sessions will be held online using the Carmen discussion group. Please bring the following items to exams: eraser, pencil and your BuckID. You are responsible for attending the midterm and final exams on the scheduled date and time. Make-up exams will be granted only in some cases*. Make-up exams may be given as oral exams. The final exam date and time are set by the university. If you miss the final for any reason, you must petition for a make-up exam through the university. Please see me immediately regarding any extenuating circumstances that pertain to any exams.

TIPS

Participation: Regularly attending classes, asking questions in class, participating in class/lab discussions is critical to your learning. You learn by reading the information, hearing it, writing about it, and talking about it. The more of these components you exercise in this course, the easier it will be for you to understand and retain the information.

Bonus points: Random attendance will be taken during the quarter to get an idea of who is regularly attending class. Up to 2 bonus points may be given to those attending lectures (that is a full point added to your final grade). These bonus point days will not be announced in advanced. There is no opportunity to do extra work for extra credit in this class.

Other tips: Be considerate of your classmates by arriving on time, turning off your cell phone, pager, or any other noise-making device before entering the classroom and by refraining from having discussions with your friends during lectures. Tardiness, whispering, and technological devices can be extremely disruptive.

Course pre-requisites and expectations:

This is an undergraduate level course. EarthSci 1100 is a pre-requisite, but this requirement can be waived with permission of the instructor. This course is designed as a science course for all majors and also fulfills the natural science sequence requirement.

Academic integrity (Academic Misconduct): The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's *Code of Student Conduct* (http://studentaffairs.osu.edu/pdfs/csc_12-31-07.pdf). Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct* and this syllabus may constitute Academic Misconduct. "It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (http://studentaffairs.osu.edu/pdfs/csc_12-31-07.pdf)."

STUDENTS WITH DISABILITIES

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs.

Office for Disability Services 150 Pomerene Hall, 1760 Neil Avenue
telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>

Policy on Religious Holidays: The University recognizes/observes holidays as listed on <http://controller.osu.edu/pay/pay-holidays.shtm>. If you observe any other religious holidays, please make special arrangements in person with the instructor within the first two weeks of class.

EARTHSCI-2206 Class Schedule (subject to change), T TH 9:35-10:55am, OR 110

Week	Date	Topic	Chapter
1	8/28	Review of Syllabus, History of Oceanography	2
2	09/02	Ocean Basins	4
	09/04	Seawater Chemistry: properties of water	6
3	09/09	Seawater Chemistry: dissolved gasses	6
	09/11	Seawater Chemistry: pH and carbonate system	6
4	09/16	Atmospheric circulation	7
	09/18	EXAM 1	
5	09/23	Hurricanes, storms, and weather	7
	09/25	Ocean circulation I	8
6	09/30	Ocean circulation II	8
	10/02	ENSO	
7	10/07	Waves and Tsunamis	9
	10/09	Tides and Estuaries	10
8	10/14	EXAM 2	12
	10/16	Life in the Oceans	
9	10/21	Pelagic Communities	13
	10/23	Nekton	13
10	10/28	Coral Reefs	14
	10/30	Benthos	14
11	11/04	Fisheries	
	11/06	EXAM 3	
12	11/11	Veteran's Day – no classes	5
	11/13	Sediments	
13	11/18	Sediments II	5
	11/20	Paleoceanography	5.7
14	11/25	Carbon Cycle and Global Warming	15.10
	11/27	Thanksgiving – no classes	
15	12/02	Marine Pollution	15
	12/04	Marine Pollution II	
16	12/09	Make-up class	
FINAL	12/12	FINAL EXAM in HH 0250 at 10-11:45am	