

INSTRUCTOR: GREG MOORE
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email: gmoore@Hawaii.edu
Office Hours: T-Th 10:15 – 11:15 and by appointment
(send me an email or talk to me to schedule a convenient time)
Class Times: Tuesday-Thursday 9:00 – 10:15 (POST 703)
REQUIRED TEXTS: *The Ocean Basins: Their Structure and Evolution (OB)*
Marine Biogeochemical Cycles (MBC)
Web Address: <http://www.soest.hawaii.edu/GG423>

The primary objective of this course is to learn about the origin, structure and evolution of the ocean basins and their margins. Our approach will be interdisciplinary, requiring integration of chemical, physical and biological processes, as well as geologic processes.

The class times will be mostly devoted to lectures and discussion. Please be sure to read the appropriate section in the text *before* class. Time will be set aside at the beginning of each class to answer questions from previous lectures or readings, and to present any current geologic events.

Grades will be based on class participation (5%), homework and quizzes (15%), two mid-term exams (25% each) and a class project (30%). There will be NO final exam. There will be a separate grading system for Graduate students and Undergraduates.

The exams will be approximately one hour long. Please note that the homework exercises will be due at the BEGINNING OF CLASS on the due date -- LATE HOMEWORK WILL NOT BE ACCEPTED because I will go over the assignments in class. Make-up exams and incomplete grades will be given only with a written excuse. Full credit for class participation means attending all classes, staying current on the readings, asking good questions, answering questions and participating in class discussions.

The class project will include researching a topic in Marine Geology that is of interest to you (must be approved by the instructor), preparing a one-page abstract, and giving a 10-minute presentation to the class. Additional details will be provided at a later date.

I will make use of the World Wide Web for various homework exercises. I will also post my lecture notes and other class information there. Please visit the URL listed above to make sure that you can access it.

This is an Upper Division course with a prerequisite of GG 302 (Igneous and Metamorphic Petrology), or consent of the instructor.

The Department of Geology and Geophysics has established the following undergraduate student learning objectives. Keep especially objectives 1, 4 and 5 in mind as overarching targets of our curriculum in GG/OCN 423.

1. Students can explain the relevance of geology and geophysics to human needs, including those appropriate to Hawaii, and be able to discuss issues related to geology and its impact on society and planet Earth.
2. Students can apply technical knowledge of relevant computer applications, laboratory methods, and field methods to solve real-world problems in geology and geophysics.
3. Students use the scientific method to define, critically analyze, and solve a problem in earth science.
4. Students can reconstruct, clearly and ethically, geological knowledge in both oral presentations and written reports.
5. Students can evaluate, interpret, and summarize the basic principles of geology and geophysics, including the fundamental tenets of the sub-disciplines, and their context in relationship to other core sciences, to explain complex phenomena in geology and geophysics.

GG/OCN 423 *TENTATIVE LECTURE OUTLINE*

WEEK #	DATE	TOPIC	READING
1	8/26	Introduction	
	8/28	Geological/Geophysical Exploration Techniques	OB Ch. 1
2	9/2	Ocean Basin Morphology	OB Ch. 2
	9/4	Continental Drift, Sea Floor Spreading	suppl
3	9/9	Plate Tectonics	suppl
	9/11	Tectonic History of the Oceans	OB Ch. 3
4	9/16	Oceanic Lithosphere	OB Ch. 4
	9/18	Mid-Ocean Ridges	OB Ch 5
5	9/23	Sea Level, Near-shore Processes	OB Ch 6
	9/25	Continental Shelves	OB Ch 6
6	9/30	Passive Continental Margins	suppl
	10/2	Active Continental Margins	suppl
		<i>Class Project Topic Approved</i>	
7	10/7	1st Exam	
	10/9	Sediment Classification, Oceanic Circulation	MBC Ch 1
8	10/14	Seawater Chemistry	MBC Ch 2
	10/16	Biochemical Processes in Seawater	MBC Ch 2
9	10/21	Biogenic Oceanic Sediments	MBC Ch 3
	10/23	Biogenic Sediments, CCD	MBC Ch 3
10	10/28	Deep Sea Clays, Authigenic Sediments	MBC Ch 5
	10/30	Terrigenous Sediments	MBC Ch 3
11	11/4	Election Day	
	11/6	Turbidites, Submarine Fans	MBC Ch 3
12	11/11	Veteran's Day Holiday	
	11/13	Paleoceanography, Climate Change	MBC Ch 4
		<i>Class Project Outline Due</i>	
13	11/18	Cenozoic Paleoceanography/Orbital Forcing	MBC Ch 4, suppl
	11/20	Deep Biosphere, Methane Hydrates	MBC Ch 5, suppl
14	11/25	2nd Exam	
	11/27	Thanksgiving Holiday	
15	12/2	Student Presentations	
	12/4	Student Presentations	
16	12/9	Student Presentations	
	12/11	Student Presentations	

For Readings, **OB** = Ocean Basins; **MBC** = Marine Biogeochemical Cycles; **suppl** = supplementary readings provided on web site