

Welcome to General Oceanography



Geology 20: *General Oceanography*:
An Introduction to Physical and Geological Oceanography
Spring Quarter, 2017
GEOL 20.63z and .65z online sections

Hi and welcome to Oceanography. I am looking forward to joining you on a voyage of discovery of your home the water world. Please think of my role more as a guide on an alien planet rather than as a "teacher." Please also feel free to contact me if there is anything I can do to help you achieve success in the class.

Dr. D

Contact Information

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Course Catalog Information

A review of modern concepts in marine geology and physical oceanography that describe the oceans as a unique environment of critical importance to human wellbeing. Emphasis is on specific topics: sedimentary and structural framework of the ocean margins and deep basins, theory of plate tectonics, water mass formation, wind-driven ocean currents, surface water waves and beaches, and tides. A discussion of shipboard instrumentation and undersea vehicles is included.

Student Learning Outcomes (SLOs) and Course Objectives

A clear understanding of what you should be learning in any class is essential to your success. Student Learning Outcomes (SLOs) and Course Objectives gives you a general picture of what is covered in the course.

Student Learning Outcomes (SLOs) for GEOL 10: Introductory Geology

Student Learning Outcomes are overarching, clear, and assessable statements that identify and define what a student is able to do at the successful completion of a specific course. These outcomes may involve a combination of knowledge, skills/abilities, and/or attitudes that display behavioral evidence that learning has occurred at a specific level of competency.

1. Apply the principles of scientific methodology to test hypotheses as to how the Earth's oceans work as an integrated system.
2. Apply the principles of scientific methodology to test hypotheses as to how the Earth's oceans work as an integrated system.
3. Analyze the dynamic movement of the water column of the oceans, through an application of the physical principles of ocean currents, waves, and tides and their effect on coastal systems and processes.
4. Apply scientific methodology and the principles of oceanography to analyze the impact of the ocean system on humanity, from specific natural hazards and the availability, use, and distribution of ocean resources.

Every effort is made so that each student will feel comfortable in a supportive collaborative learning environment. I invite you all to work with me towards achieving that goal. I also invite you to reach out to each other in the class and work with all of your colleagues giving each classmate and their thoughts the respect deserved.

Course Objectives for GEOL 10: Introductory Geology

The course objectives for Introductory Geology expand out of the overarching Student Learning Outcomes. In general they are intended to foster an understanding of the scientific approach to problem solving and a specific knowledge of the fundamental concepts of geology.

- A. Summarize and describe a globally and temporally inclusive overview of the Earth.
- B. Distinguish between hypotheses, theories, and laws, and demonstrate the assessment of hypotheses through testing.
- C. Analyze the physical properties of minerals and their significance in rock genesis, starting with basic chemical principles.
- D. Distinguish between the major families of rocks and analyze how they relate to each other as parts of the rock cycle; interpret conditions of formation from physical characteristics of rocks.
- E. Evaluate relative age-relationships between rock units in order to develop a geologic time scale, and calibrate this time scale by calculating rock ages via isotopic dating.
- F. Construct and interpret geologic maps and cross-sections in order to delineate the three-dimensional structure of the earth's crust; visualize structures such as faults and folds.
- G. Assemble and synthesize geophysical information in order to assess earthquake hazards and to construct plausible models of the Earth's deep interior.
- H. Synthesize geological, seismological, and paleomagnetic data in order to demonstrate an understanding of global plate tectonics, and predict phenomena such as the locations of earthquakes and volcanoes.
- I. Analyze imagery and topographic data in order to elucidate the evolution of landforms produced by the interaction of rock, soil, water, wind, and ice.
- J. Evaluate and assess environmental hazards in a geologic context; assess locations of geologic resources such as mineral deposits and hydrocarbons from geologic data, and appraise the impacts of geologic resource issues on the environment and human populations.

Required Materials



Note: It is your responsibility to be prepared for each class session. Having the required materials, doing readings, having the proper Ocean Discovery activities with you at the right time is important to your success.

Textbook: *Discover Planet Earth: The Ocean World* by DiLeonardo C. G. and James, B. R.

NOTE: Available for purchase directly online, instructions will be sent along with a registration guide.

Ocean Discovery Journal each student will keep their completed work from discussion activities in a notebook (journal).

Other: Pencil, eraser, millimeter-scale ruler and calculator.

Read Me First!

At the beginning of each module is a “read me first” page. You should read this page.... Before beginning any part of the module for that week. There are also a set of administrative files that should be read before completing any part of the coursework.

Class Policies

A Note about Online Classes

Online courses are different from traditional lecture courses. They offer much more flexibility in completing assignments and learning material from sources other than traditional lectures. However, you will need to have good self-discipline in completing these tasks, especially in a timely manner. This is a four-unit course. This equates to four hours of work per week during a regular quarter. This does not include the extra personal study time needed in addition to those mandatory class hours that the State of California and De Anza College requires. If you are planning on mastering the material covered this quarter, you will need to make sure you 1.) Are engaged in the course at least 4-hours a week (not including study time); 2.) Login at least two different days during the week (to maximize your forum participation points); 3.) Prepare the exams using your notes from online learning tutorials, your completed activities, and your textbook readings.

learning of the subject and impact your work on exams. As much of the exam material comes out of learning tutorials you are encouraged to discipline yourself to go through them in each module and take notes. Notes do not need to be turned into me, but will become invaluable resources along with your textbook in completing the exams.

Foreign Participation

One time each week for C-level work, or a couple of times a week for A-level or B-level work you will be required to participate in an online forum on topics involving the earth sciences and atmosphere. More details of what will be expected of you can be found in a document called "Forum Participation Guidelines" located at the top center of the course website. Forum posts are not accepted late for any reason. However, you will be allowed to make up one week's worth of forum participation as there will be a make-up forum provided at the end of the quarter during Final Exam week.

Activities

In each module will be an inquiry-based activity that leverages the learning on that topic. You will commonly write answers down on activity worksheets that you will keep in your *Ocean Discovery Journal*. Once completed you will answer questions online that I will review regarding

Class Modules

A module is specific and discrete learning segment that leads to the understanding of a given topic. Modules will be assigned by topic on Catalyst. Modules include all assignments that will be completed for a particular topic. A module is a specific and discrete learning segment that leads to the understanding of a given topic. Modules are to be completed within the dates specified on the syllabus (schedule is below). More details on these assignments, including which ones will be turned in, as well as how they will be turned in are explained below and on the assignments themselves.

Learning Tutorials

Learning tutorials online will be used instead of traditional lectures. They may incorporate video lectures or other materials online. Any lectures will be delivered via a link to a YouTube presentation other materials will be offered via a link to an online learning resource. Missing the learning tutorials, much as missing lectures in a traditional class, will severely impact your

the activity you completed. The work in your *Ocean Discovery Journals* is for your own use and will not be collected, but it will not be possible to complete the activity reviews without doing the activity first and referencing your journal. Also your journal will be invaluable in preparing your exams for the course.

Readings from Web Textbook

This class is designed around an integrated approach to learning. It is very important that you do the reading in the online textbook assigned each week. The book will also be an invaluable resource for preparing the midterm and final exam for the course

Academic Policies

You are advised to consult the College Catalog or Student Handbook regarding issues of discipline, cheating, etc. The counseling staff and I are also available to discuss college policy as the need arises.

Academic Progress

You are encouraged to monitor and discuss with me your academic progress in this course. The grading system is clearly outlined below and there will be no “special” projects available to make up for *poor* academic performance. Note: Failure to properly withdraw from the course will result in a letter grade of “F” for the course.

Field Workshop & Waiver of Liability

Enrolling in this course during the term is the option of the student. If the student chooses to enroll in Geology 20 he/she MUST fulfill a field study option (Module 10). Student may attend the Introductory Field Workshop*. Please see the schedule below for the date and time of the field workshop. As required by state law all student’s participating in the workshop MUST sign the appropriate waiver of liability. Student’s not wishing to participate or who do not wish to sign the waiver and release of liability will be dropped from the class.

For students who live outside of the San Francisco Bay Area or have a conflict with the field trip date... please check the Catalyst site for an alternate field study assignment.

*****Americans With Disabilities Act (ADA) Exemption from Field Work:***

Students with physical limitations or other special needs that would preclude participation in fieldwork will be given an appropriate alternate assignment. Every reasonable accommodation will be provided so that all students can participate and benefit from the field experience. If you have questions or concerns regarding access and participation issues please contact your instructor. This exemption only applies to students with documented disabilities that have been verified through the Disabled Students Program & Services Office at De Anza College and where no appropriate accommodation can be made for participation.

Grading

Grades are based on objective assessment in the course and your participation in hands-on activities.

1,000 pts for the class:

150 pts. Activities and Field Work

Activities 100 pts. Given as in-class collaborative assignments.

Field Activity* 50 pts. Mandatory coastal field workshop. Students are responsible for their own travel arrangements.

750 pts. Subject Mastery Tests (3 @ 250 pts. each):

Subject Mastery Test 1: Ocean Floor 250 pts.

Given as collaborative/take home Subject Mastery Test.

Part A 250 pts Basic Knowledge and Understanding Questions

Part B 25 extra credit pts Application and Deeper Understanding Questions

Subject Mastery Test 2: Physical Oceanography 250 pts.

Given as collaborative/take home Subject Mastery Test.

Part A 250 pts Basic Knowledge and Understanding Questions

Part B 25 extra credit pts Application and Deeper Understanding Questions

Subject Mastery Test 3: Coastal Oceans and Coastal Processes 250 pts.

Given as collaborative/take home Subject Mastery Test.

Part A 250 pts Basic Knowledge and Understanding Questions

Part B 25 extra credit pts Application and Deeper Understanding Questions

100 pts. Final Exam*

A review of questions from the three subject mastery tests (in-class, non collaborative assessment).

Students **MUST** be present at and participate in the final exam to pass the class. Students failing the final exam will have points deducted from their aggregate scores for every point below passing recorded on the exam.

Final Grade

Plus	Letter Grade	Minus	Rubric
A+ > 999 pts	A = 895 to 999	A- = 875 to 894	Student displays both a level of knowledge and understanding of the ocean system superior to the general public.
B+ = 855 to 874	B = 771 to 854	B- = 750 to 770	Student displays a level of knowledge of the ocean system significantly above that of the general public; and a basic understanding of the principles governing the ocean system.
C+ = 730 to 749	C = 625 to 730		Student demonstrates a basic knowledge of the ocean system above that of the general public.
D+ = 605 to 624	D = 520 to 604	D- = 500 to 519	Student does not demonstrate knowledge and understanding of the ocean system beyond that of the general public.
F < 500 pts			

Final grades are “non-negotiable” and are based entirely on your performance in class work, quizzes, collaborative experiences, and exams. Once posted, grades cannot be changed unless there is a recording error. This is a matter of State Law. Please don’t ask!

*Each student is required to attend the field trip and be present at the final examination to receive a passing grade for the course.**

Class Schedule Fall 2016

Class Schedule is tentative and subject to change by your professor as deemed necessary. You are encouraged to check the class website each week for changes and updates to the class schedule.

<u>Module</u> Date Posts	<u>Topic:</u> Assignment	<u>Reading</u>
PROLOUGE: THE SCIENCE OF THE WATER WORLD		
01 01/09	Science and the Study of the Water World <i>An Introduction to the Course and the Science of Oceanography</i>	Chap. 1
PART I: THE OCEAN FLOOR		
02 01/16	Secrets of the Deep <i>Exploring the Ocean Floor</i>	Chap. 2
03 01/23	The Dynamic Ocean Floor <i>Plate Tectonics & the Origin of Ocean Basins</i>	Chaps. 3 & 4
04 01/30	The Record of Ancient Oceans <i>Marine Sediments and Erosion of the Ocean Floor</i>	Chap. 5
05 02/06	<u>Midterm Examination</u>	
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PART II: PHYSICAL OCEANOGRAPHY		
06 2/13	The Rising Tide: Oceans, Currents and Carbon Dioxide Ocean Circulation & the Climate System	Chap. 9
07 02/20	The Relentless Sea <i>Waves on Water</i>	Chap. 11
08 02/27	Rising Seas <i>Tides and the Rhythmic Rise and Fall of Sea Level</i>	Chap. 10
PART III: COASTAL SYSTEMS		
09 03/06	The Changing Coastlines of Planet Earth <i>Beach Processes and Coastal Erosion</i>	Chap. 12
10 03/13	The Oceans at Our Reach <i>The Coastal Ocean and Our Legacy on a Water World</i>	Chap. 13
11 03/20	<u>Coastal Field Study</u> <i>Coastal Field Studies see class Catalyst site for details and options for completion of the field study requirement.</i>	
12 03/27	<u>Final Examination</u> Due: 03/31 5:00 pm PDT (End of Session)	