

Welcome to General Oceanography



Geology 20: *General Oceanography*:
An Introduction to Physical and Geological Oceanography
Winter Quarter, 2021
GEOL 20.61z and 20.65z 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 a 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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F 20 GEOL D20 General Oceanography

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.

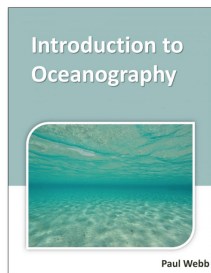
Course Objectives for GEOL 20: General Oceanography

The course objectives for Oceanography expand out of the overarching Student Learning Outcomes. In general they are intended to foster an understanding of scientific approaches to problem solving and a specific knowledge of the Earth's ocean as an integrated system.

- A. Examine the use of scientific methodology through the history of geographical and scientific exploration of the ocean system.
- B. Describe the ocean system as an integral part of Earth's environment, with emphasis on those features and processes that are uniquely oceanic.
- C. Examine Earth's plate tectonic framework. Explain the relationship between earthquakes and volcanoes, particularly those in western California, and the geological changes in the sea floor.
- D. Compare the variety of marine geological provinces, from continental shelves to the deep sea, and the physical and geological characteristics of these provinces.
- E. Analyze the chemical and physical properties of seawater, and the importance that these properties have in maintenance of life on the planet.
- F. Describe the distributions of temperature, salinity and density in the oceans, and how the oceans achieve these distributions.

- G. Examine the impact of waves, ocean currents, and tides on the ocean system. Describe the impact of these processes on climate, maritime operations and human exploitation of the marine environment.
- H. Examine critical issues facing the marine environment.
- I. Appreciate the role of oceanographic research in resource development, pollution control, national security, and understanding Earth's climate system.

Required Materials



Webb, Paul

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: *Introduction to Oceanography,*

NOTE: *This book is available to you free of charge as an Open Source textbook through creative commons license.*

ADDITIONAL NOTE: *The textbook reading assignments will be linked directly from the "This Week in Oceanography" page on the Canvas Class Website. It is expected that you do the reading in advance of Learning Tutorials or Ocean Discovery Activities.*

Ocean Discovery Journal each student will keep their completed work from discussion activities in a notebook (journal). You will build this journal over the course of the term and use it especially when completing exams.

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.

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.

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 Canvas. 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 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.

Forum 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 oceans. 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 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. The readings are an important part of your learning, especially in an online course where your work is more independent than a face-to-face classroom setting. The textbook adopted this term is an *Open Source* free to you resource. You will find the individual chapter readings from the book linked directly from the weekly “This Week in Oceanography” page on the Canvas Class Site.

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 Studies Module

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 11). Students who live in the Bay Area, along the central Coast or in another area where a coastline is accessible are expected to conduct the study of the field area in person. Please check the website for options to complete the work and what the requirements are for this module. Again it is expected that you conduct this study in person if at all possible.

For students who live outside of the San Francisco Bay Area or central coast of California, or do not have access to a coastline... please check the Oceanography Class site for an alternate field study assignment. Given the current “Shelter in Place” orders in California there may be no opportunity to complete this activity in the field... so all students this term can opt for the virtual field studies assignment as outlined in *Module 11* available on the Class Canvas Site in June.

*****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

Grading

Grades are based on objective assessment in the course and your participation in hands-on activities.
1,000 pts for the class:

300 pts. Activities and Field Work

Activities 250 pts. Weekly assignments completion measured by short questions for each module.
Field Activity* 50 pts. Mandatory coastal field project. Students are responsible for their own travel arrangements if visiting a coastline.

200 pts. Forum Participation

Weekly Forum Participation 200 pts.

500 pts. Examinations (2 @ 250 pts. each):

Midterm Exam: Ocean Floor 250 pts.

Collaborative preparation with online testing.

Part A 200 pts Basic Knowledge and Understanding Questions

Part B 50 pts Application and Deeper Understanding Questions

Final Exam: Physical Oceanography and Coastal Processes 250 pts.

Collaborative preparation with online testing.

Part A 200 pts Basic Knowledge and Understanding Questions

Part B 50 pts Application and Deeper Understanding Questions

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 complete the coastal field project and be present at the final examination to receive a passing grade for the course.*

Class Schedule Fall 2020

Class Schedule is tentative and subject to change by your professor as deemed necessary. You are encouraged to login to the class website at the beginning of 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 01/04	Science and the Study of the Water World <i>An Introduction to the Course and the Science of Oceanography</i>	Special Paper
PART I: THE OCEAN FLOOR		
02 01/11	Secrets of the Deep <i>Exploring the Ocean Floor</i>	Chap. 1
03 01/18	The Dynamic Ocean Floor <i>Plate Tectonics & the Origin of Ocean Basins</i>	Chaps. 3 & 4
04 01/25	The Record of Ancient Oceans <i>Marine Sediments and Erosion of the Ocean Floor</i>	Chap. 12
05 02/01	<u>Midterm Examination</u>	
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PART II: PHYSICAL OCEANOGRAPHY		
06 02/08	The Rising Tide: Oceans, Currents and Carbon Dioxide Ocean Circulation & the Climate System	Chaps. 8 & 9
07 02/15	The Relentless Sea <i>Waves on Water</i>	Chap. 10
08 02/22	Rising Seas <i>Tides and the Rhythmic Rise and Fall of Sea Level</i>	Chap. 11
PART III: COASTAL SYSTEMS		
09 03/01	The Changing Coastlines of Planet Earth <i>Beach Processes and Coastal Erosion</i>	Chap. 13
10 03/08	The Oceans at Our Reach <i>The Coastal Ocean and Our Legacy on a Water World</i>	
11 03/15	<u>Coastal Field Study</u> <i>Coastal Field Studies see class Canvas site for details and options for completion of the field study requirement. *Due Sunday 03/21 11:55 pm PDT.</i>	
12 03/22	<u>Final Examination</u> Due: Monday 03//22 11:55 pm Pacific Time (End of Session)	

Student Learning Outcome(s):

- *Apply the principles of scientific methodology to test hypotheses as to how the Earth's oceans work as an integrated system.
- *Use observations and data to characterize the dynamic Earth processes that act to shape the ocean floor and analyze the record of these processes within marine sediments and oceanic crust.
- *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.
- *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.