

Welcome to General Oceanography



Geology 20: *General Oceanography*:
An Introduction to Physical and Geological Oceanography

Fall Quarter, 2024

GEOL 20.10

Tu, Th 10:30 am to 12:20 pm

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

Christopher DiLeonardo, Ph.D.

Office S14a

Contact: via Canvas Messenger not email

Office Hours Tu, Th 12:30 to 1:30 pm

Via Zoom Tu, Th 9:30 to 10:30 am

Use Canvas Messaging to set up appointment.

Phone (408) 864-8632

email: dileonardo@deanza.edu

course website: MyPortal/Canvas

F 24 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.

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 20: General Oceanography

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. 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.
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.

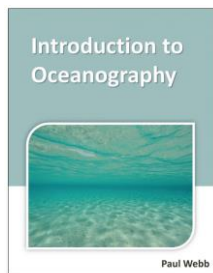
4. Apply scientific methodology and the principles of oceanography to analyze the impact of the ocean system on humanity, from specific natural hazards and the availability, use, and distribution of ocean resources.

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



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*, Webb, Paul.

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.*

Weekly Class Page!

The weekly class page has everything you need to complete for the week under the heading: "What should I be doing this Week?" You will find a numbered list with links to everything you need to accomplish. Going down this list each week is an easy way to stay on track in the course. ALWAYS access assignments, readings, quizzes, etc. through this page.

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.

A Note about Ocean Discovery Activities

Ocean Discovery Activities are a collaborative discovery-based-learning experience. These activities happen in real time and in sequence with the lecture. Whereas students are encouraged to go over individually and with their classmates any missed work, the actual experience cannot be made up. It is important to note as well that missing activity participation has a cumulative negative impact on your learning. Deductions to your participation score will reflect that

Class Format

Oceanography is a four-unit course consisting of four-hours weekly workshop-style instruction, integrating lecture, discussion and one Saturday field trip. The discussion meetings will include either a video viewing and discussion, or a hands-on activity. These activities are designed to give you some practical experience with methods and principles common in oceanography. Students must download the discussion activity for the week from the website. You must look over before coming to class and have it to participate in the activity. 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 dishonesty “cheating,” will not be tolerated and students will receive a score of 0 on any assignment they have been found to have cheated. Additionally, this will call into question the validity of their course assessment and will require ALL assessments be redone under my watchful eye.

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. If you are struggling with specific learning issues, I would recommend reaching out to the Disabled Student Services on Campus (link on class home page). *Note: Failure to properly withdraw from the course will result in a letter grade of “F” or “FW” for the course, depending on the timing of your disengagement from the class.*

Coastal Field Workshop & Fieldtrip Exchange

Enrolling in this course during the term is the option of the student. If the student chooses to enroll in Geology 20 he/she/they **MUST** 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.**

The field workshop is part of the curriculum of the Coastal Geology and Processes unit at the end of the course. Student's time however is adjusted from their regular schedules of lecture during the term. An exchange of 4 hours (one-week of class time) occurs during the term. This time is shown below in the printed schedule for the term and does not necessarily fall near or during the week the field workshop occurs. Please check the schedule below.

*****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.

Contacting Me

If you have any concerns or questions about the course or your progress, I encourage you to reach out and send me a message. Please contact me using **Canvas Messenger** not regular email. This way I will be sure to see your email without delay. I will reply within 24 hours Monday through Thursday and on Monday for messages sent Friday through the Weekend.

Grading

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

1,000 pts for the class:

400 pts. Activities and Field Work

Activities 350 pts. Weekly assignments completion.

Field Activity* 50 pts. Mandatory coastal field study project. Students are responsible for their own travel arrangements if visiting a coastline.

600 pts. Examinations (2 @ 300 pts. each):

Midterm Exam: Ocean Floor 300 pts.

Covers first part of the course on *The Ocean Floor*

Part A 150 pts Take-home collaborative

Part B 150 pts In-class independent assessment

Final Exam: Physical Oceanography and Coastal Processes 300 pts.

Collaborative preparation with online testing.

Part A 150 pts Take-home collaborative

Part B 150 pts In-class independent assessment

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 participate in the final examination to receive a passing grade for the course.**

Class Schedule Fall Quarter 2024

Class Schedule is tentative and subject to change by your professor as deemed necessary.

<u>Week</u> Date Posts	<u>Topic:</u> Assignment	<u>Reading</u>
PROLOUGE: THE SCIENCE OF THE WATER WORLD		
01 09/24 -09/26	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 10/01-10/03	Secrets of the Deep <i>Exploring the Ocean Floor</i>	Chap. 1
03 10/08-10/10	The Dynamic Ocean Floor <i>Plate Tectonics & the Origin of Ocean Basins</i>	Chaps. 3 & 4
04 10/15-10/17	The Record of Ancient Oceans <i>Marine Sediments and Erosion of the Ocean Floor</i>	Chap. 12
05 10/22-10/24	<u>Midterm Examination</u> (Tu prep for exam on Th)	
PART II: PHYSICAL OCEANOGRAPHY		
06 10/29-10/31	The Rising Tide: Oceans, Currents and Carbon Dioxide Ocean Circulation & the Climate System	Chaps. 8 & 9
07 11/05-11/07	Field Trip Exchange Week <i>No lecture this week. See class website.</i>	
08 11/12-11/14	The Relentless Sea <i>Waves on Water</i>	Chap. 10
09 11/19-11/21	Rising Seas <i>Tides and the Rhythmic Rise and Fall of Sea Level</i>	Chap. 11
PART III: COASTAL SYSTEMS		
10 11/26	The Changing Coastlines of Planet Earth <i>Beach Processes and Coastal Erosion (Thursday Holiday 11/28)</i>	Chap. 13
11 12/03-12/05	The Oceans at Our Reach <i>The Coastal Ocean and Our Legacy on a Water World</i>	
12/07	<u>Coastal Field Study</u> <i>Saturday Field Excursion: San Mateo County Coast 11:30 am to 1:40 pm.</i>	
12 12/12	<u>Final Examination</u> Thursday 12/12 9:15 am to 11:15 am (Normally Meets at 10:30 am)	

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.

Office Hours:

T,TH	09:30 AM	10:30 AM	Zoom
T,TH	12:30 PM	01:30 PM	In-Person,By AppointmentS14A