

Welcome to General Oceanography



Geology 20: *General Oceanography*:
An Introduction to Physical and Geological Oceanography
Fall Quarter, 2017
GEOL 20.01 in-class section

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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(Behind Geology Teaching Lab)

Office Hours M, W 1:30 to 2:30 pm
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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.

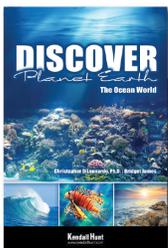
Every effort is made so that each student will feel comfortable in a supportive collaborative learning environment. I invite you all to work with me towards achieving that goal. I also invite you to reach out to each other online and work with all of your colleagues giving each classmate and their thoughts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

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: *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.*

ADDITIONAL NOTE: *The textbook is being constructed by web-developers and being made available by special arrangement with the publisher this term. Only the chapters we need for the course will be available with two used later in the term available when needed.*

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.

Watch Out for My Weekly Email

At the end of each week I will send you an email about the upcoming week. You should read this email... before coming to class the next week. Not only will it keep you apprised of what's happening in class, activities will be attached to these emails as .pdf files. You should print these out and bring them to class.

A Note about Collaborative Work

The activities done in class and some of our discussions are designed around a collaborative approach to learning. Numerous studies on undergraduate success has demonstrated that a collaborative approach to coursework enhances student learning and increases student success greatly. I will make every effort, and I am asking for your help as well, to create a comfortable and safe learning environment of inclusion. Everyone should feel free to speak their mind openly and feel respected within the teaching laboratory where class is held. Please reach out to one another and especially to those who may have difficulties participating. I would encourage you to carry this spirit of collaboration outside of class time especially on take-home tests and other assignments.

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 my weekly email. You must look it over before coming to class and have it to participate in the activity.

Attendance in Class

Attendance is critically important to your success in this course. In general missing more than a week's worth of class time may result in dismissal from the course. This is NOT automatic though and if you intend to drop the

course it is your responsibility to initiate the drop with admissions and records. Also you may not drop OR be dropped from the course once the last day to drop has past.

Arriving late to class or leaving early can be terribly disruptive to the educational process. It may not seem like much but each individual arriving late distracts from what we are doing in class. Moreover, as many important announcements and the framework of the lecture (putting the learning into perspective) presented at the beginning of class, these few minutes have a HUGE impact on your own learning.

Note: Failure to properly withdraw from the course will result in a letter grade of "F" for the course

Activities

Each week will include 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*. The work in your *Ocean Discovery Journals* is for your own use and will not be collected, but 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. Please note the book is under construction and ONLY the chapters we will be using will be available to you during the course of the term. If you click on a chapter link and there is nothing there it is because it is not being used in the course. The readings are an important part of the course. Please purchase a license for the web-textbook immediately and follow the reading sequence given below and as described in each module of 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.

Coastal Field Studies Workshop

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 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.

*****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 2017

Class Schedule is tentative and subject to change by your professor as deemed necessary. Please make sure to read the weekly class emails sent to you at the end of the previous week.

| <u>Week</u> Dates | <u>Topic:</u> Assignment | <u>Reading</u> |
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| PROLOUGE: THE SCIENCE OF THE WATER WORLD | | |
| 01 09/25-27 | 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 10/02-10/04 | Secrets of the Deep <i>Exploring the Ocean Floor</i> | Chap. 2 |
| DISC | Activity: Visualizing Topography | |
| 03 10/09-10/11 | The Dynamic Ocean Floor <i>Plate Tectonics & the Origin of Ocean Basins</i> | Chap.3 & 4 |
| DISC | Activity: Plate Tectonics | |
| 04 10/16-10/18 | The Record of Ancient Oceans <i>Marine Sediments and Erosion of the Ocean Floor</i> | Chap. 5 |
| DISC | Activity: Discovering Sand <i>Subject Mastery Test I sent out this week.</i> | |
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| PART II: PHYSICAL OCEANOGRAPHY | | |
| 05 10/23-10/25 | The Rising Tide: Oceans, Currents and Carbon Dioxide <i>Ocean Circulation & the Climate System</i> | Chap. 9 |
| DISC | Activity: Climate in the news <i>Subject Mastery Test I due Monday (10/23)</i> | |
| 06 10/30-11/01 | The Relentless Sea <i>Waves on Water</i> | Chap. 11 |
| DISC | Activity: Sea Level | |
| 07 11/06-11/08 | Rising Seas <i>Tides and the Rhythmic Rise and Fall of Sea Level</i> | Chap. 10 |
| DISC | Activity: Using Tide Data <i>Subject Mastery Test II sent out this week.</i> | |

| <u>Week</u> Dates | <u>Topic:</u> Assignment | <u>Reading</u> |
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PART III: COASTAL SYSTEMS

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| 08 11/13-11/16 | The Changing Coastlines of Planet Earth <i>Beach Processes and Coastal Erosion</i> Subject Mastery Test II due in class on Monday (11/14) | Chap. 12 |
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| 09 11/20-11/22 | The Oceans at Our Reach <i>The Coastal Ocean and Our Legacy on a Water World</i> Activity: Coastal Processes Subject Mastery Test II sent out this week. | Chap. 13 |
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| 10* 11/27-11/29 | <u>No Oceanography Class Meetings This Week</u> Field workshop exchange Subject Mastery Test III sent out this week. | |
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SATURDAY

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| 12/01 | Introductory Field Workshop (Required): <i>Beach processes and coastal geology of the San Mateo County Coastline, California. Time: 11:30 am –2:00 pm</i> Workshop info will be sent out in the Week 10 email. | |
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| 11 12/04 | Collaborative Test III Subject Mastery Test III due Monday at end of Class (12/05). Informal discussion to wrap up term. | |
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| 12/06 | <i>Prep for Final Exam</i> | |
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12 FINAL EXAM WEEK

Final Exam Schedule:

Section GEOL 20-01 Note: Do NOT be late for the final exam student who show up after any other student has completed the final exam will not be allowed to take the final exam and will receive an F for the course!

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| <u>Monday 12/11</u> | 11:30 pm – 1:30 pm Bring an appropriate ParScore® form and No. 2 pencils to the final exam. |
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*Students **must** attend and participate in the final exam and participate in the introductory field workshop to receive a passing grade in the class.