

Welcome to General Oceanography



Geology 20: *General Oceanography*:
An Introduction to Physical and Geological Oceanography
Fall Quarter, 2019
GEOL 20 (4.0 units)
GEOL 20.01 Lec MW 11:30 am to 1:20 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.

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(Behind Geology Teaching Lab)

Office Hours M,W 10:30 to 11:30 am

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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.

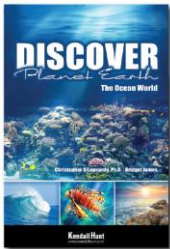
Course Objectives for GEOL 10: Introductory Geology

The course objectives for Introductory Geology expand out of the overarching S-L-O. 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.

Weekly Updates

Weekly updates will be sent via email to all members of the class. These will keep you informed on upcoming reading assignments, due dates, and activities. Activity worksheets and other important documents will be sent to you as attachments.

Class Policies

Attendance

Students are expected to attend every class meeting! Missing class may have the single greatest negative effect on your learning. Missing a class has a huge “ripple effect” as holes form in your learning that impede your understanding of future lectures, laboratories, or readings. Commonly when I meet with students during the term who are struggling, attendance is a major issue. A student may be dropped from this course if the absences exceed the equivalent of one week’s class work. Students who wish to drop must follow proper withdrawal procedures as outlined in the schedule of classes. **DO NOT ASSUME** that your professor has removed you from the course.

Note: *Failure to properly withdraw from the course will result in a letter grade of “F” for the course.*

A Note on Class Format & Requirements

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.

Arriving on Time for Class

Students are expected to arrive for class on time! Being late to class is not only disruptive to the learning environment of your classmates, but also has a huge negative impact on your own learning. The first ten to fifteen minutes of class is when critical information is given about assignment and schedule changes. If missed you may not realize that an assignment, quiz or exam was moved up or back in the schedule. More importantly, the beginning of each lecture is commonly where the educational framework for the lecture is set. If you walk in late you may not have the “scaffolding” to hold your learning on and miss

out on the point of much of what follows in the lecture. Students who arrive after the official start time of the class will be marked as “late.” Students arriving late are disruptive to the educational environment of the class. This will not be tolerated. Two “late marks” will be considered the equivalent to an absence and will be counted as such with regards to the attendance policy (see above) and in calculating participation (laboratory and field work) scores for the final grade.

Preparation for Class

You should come to class prepared. Students who are not prepared struggle through the individual class and through the course. If you attend every class meeting, and complete every reading and assignment prior to the class it is due you should have little trouble in passing this course. Higher levels of mastery of the subject may require more effort. This is a moderately rigorous college science class and laboratory. Having said that you have the ability and I am here to work with you. Your level of success is dependent on you, if you have issues that are causing you difficulties talk to me and we'll see if we can work through it together or if there are resources on campus available to you that could offer help.

Academic Integrity

You have made a commitment to your education by enrolling at De Anza College. This commitment requires that you represent your own academic work honestly to others. Academic dishonesty “cheating,” will not be tolerated. Please read the college policies regarding academic dishonesty in the college catalog. Students who have been found to be engaging in academically dishonest behavior (“cheating”) while participating in this course will receive a letter grade of F for the assignment and may be referred to the Dean of Students for college disciplinary action. Students found to be cheating on any assignment will call into question the validity of their course assessment and must retake ALL assessment instruments to insure their voracity.

Academic Policies & Progress

Students are advised to consult their 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. 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. But... the course is designed for your success.

Cellular Phones, mobile devices, other personal electronic devices

The use of cellular phones, iPods, music players, or other personal electronic devices during lecture or laboratory activities is prohibited. Computers used to take notes during lecture are allowed as long as they are not being used for another purpose or for online access of any kind. Laboratory computers are for completing laboratory activities only and not to be used for other purposes. Students not in compliance with this policy will be asked to leave the class for the day on a first violation and may be dropped from the class if a second violation occurs. Students found to be using any electronic device during a test, quiz, or exam, will receive a 0 and be asked to leave the class for the day. This will be considered an absence for purposes of the attendance policy.

Field Workshop & Waiver of Liability

Students in Geology 10 must attend the Introductory Field Workshop*. Please see the schedule below for the date and time of the field workshop.** State law mandates ALL students participating in an off campus “field excursion” sign an appropriate waiver. As the fieldwork is a requirement of the curriculum students who refuse to sign the waiver are opting out of the course and will be dis-enrolled.

*****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 | <i>Student displays both a level of knowledge and understanding of the ocean system superior to the general public.</i> |
| B+ = 855 to 874 | B = 771 to 854 | B- = 750 to 770 | <i>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.</i> |
| C+ = 730 to 749 | C = 625 to 730 | | <i>Student demonstrates a basic knowledge of the ocean system above that of the general public.</i> |
| D+ = 605 to 624 | D = 520 to 604 | D- = 500 to 519 | <i>Student does not demonstrate knowledge and understanding of the ocean system beyond that of the general public.</i> |
| 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> |
|---|--|----------------|
| PROLOUGE: THE SCIENCE OF THE WATER WORLD | | |
| 01 09/23-25 | 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 09/30-10/02 | Secrets of the Deep <i>Exploring the Ocean Floor</i> | Chap. 2 |
| DISC | Activity: Visualizing Topography | |
| 03 10/07-10/09 | The Dynamic Ocean Floor <i>Plate Tectonics & the Origin of Ocean Basins</i> | Chap.3 & 4 |
| DISC | Activity: Plate Tectonics | |
| 04 10/14-10/16 | 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> | |
| <hr/> | | |
| PART II: PHYSICAL OCEANOGRAPHY | | |
| 05 10/21-10/23 | 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 (10/21)</i> | |
| 06 10/28-11/30 | The Relentless Sea <i>Waves on Water</i> | Chap. 11 |
| DISC | Activity: Sea Level | |
| 07 11/04-11/06 | 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> |
|----------------------|-----------------------------|----------------|
|----------------------|-----------------------------|----------------|

PART III: COASTAL SYSTEMS

08

11/11

No class meeting Monday: Veteran's Day

11/13

The Changing Coastlines of Planet Earth
Beach Processes and Coastal Erosion
Subject Mastery Test II due in class on Monday (11/11)

Chap. 12

09

11/18-11/22

The Oceans at Our Reach
The Coastal Ocean and Coastal Processes

Chap. 13

DISC

Activity: Coastal Processes

SATURDAY

11/23

Introductory Field Workshop (Required):
Beach processes and coastal geology of the San Mateo County Coastline, California. Time: 11:30 am –2:00 pm
Workshop info will be sent out in the Week 10 email.

10*

11/27

No Oceanography Class Meetings Monday
Field workshop exchange
Subject Mastery Test III sent out this week.

11/20

Collaborative Test III
Subject Mastery Test III due Wednesday at end of Class (12/06).

11

12/04

No Oceanography Class Meetings Monday
Field workshop exchange

12/06

Prep for Final Exam
Subject Mastery Test III due Wednesday at end of Class (12/06).

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!

Monday 12/11

11:30 pm – 1:30 pm

Bring an appropriate Scantron® form and No. 2 pencils to the final exam.

Students **must attend and participate in the final exam and participate in the introductory field workshop to receive a passing grade in the class.*

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.