Welcome to Geology 10

Geology 10: *Introductory Geology*
Winter Quarter, 2024
GEOL 10 (5.0 units)
GEOL 10.20

De Anza College
Earth and Space Sciences Program

GEOL 10.20 Tu, Th 1:30 pm to 3:20 pm (Lec)
Tu, Th ,3:30 pm to 4:45 pm (Lab)
Course website: on Canvas via your De Anza MyPortal

Hi and welcome to Introductory Geology. I am looking forward to joining you on a journey of discovery of your home planet. Please think of my role more as a guide on a an alien world rather than as a "teacher." 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
(Behind Geology Teaching Lab)
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 Catalog Information

Analysis of the composition, structure, and description of the Earth's external and internal features and the geologic processes responsible for their origin and evolution. Examination of the concepts and principles upon which geologic knowledge is based. One Saturday field trip is required.

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 on how the Earth works as an integrated system.
2. Use data and observations to track and predict changes in the Earth system resulting from dynamic Earth Processes.
3. Use observations from the crust and lithosphere of the Earth to determine geologic history at hand sample, outcrop, local, and regional scales.
4. Apply scientific methodology and geologic principles to analyze the impact of the Earth system on humanity, from specific natural hazards and the availability, use, and distribution of Earth 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.

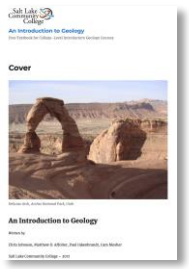
G. Assemble and synthesize geophysical information in order to assess earthquake hazards and to construct plausible models of the Earth's deep interior.

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.

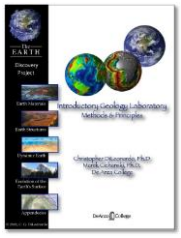
J. Evaluate and assess environmental hazards in a geologic context; assess locations of geologic resources such as mineral deposits and hydrocarbons from geologic data, and appraise the impacts of geologic resource issues on the environment and human populations.

Required Materials



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

Textbook: *An Introduction to Geology*, Johnson, C., Matthew, A.D., Inkenbrandt, P., Mosher, C. 2017 Salt Lake Community College.
Note: Digital Online Textbook, is a Creative Commons Work, free for noncommercial use. Readings will be available through the Canvas course site.



Lab/Activities: Come from the free digital lab manual: *Introductory Geology Laboratory: Methods and Principles,* v. 1.4, DiLeonardo, C.G. The Earth Discovery Project 2020.

Note: Lab exercises will be available weekly through Canvas site online.
Other: Color pencils and Millimeter scale/ruler

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 Note on Laboratory Work

Laboratory work is 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 lab partners any missed work, the actual experience cannot be made up. It is important to note as well that missing lab work has a cumulative negative impact on your learning. Deductions to your participation score will reflect that impact. The first lab session missed during each half of the term will result in a 10-point deduction for each session. More missed lab work will be deducted at 15 points per session up to the 50 points available for each half of the course. Also note students exceeding the attendance policy in

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."

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 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 score of 0 points 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, 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.

Field Workshop Exchange

The required field workshop occurs on a Saturday. Between an average transportation of over an hour each way and fieldwork of over 4 hours your total time is about equivalent to your weekly lecture and laboratory hours. As we must account for all of your hours in the course as a matter of state audit, these hours are exchanged for one of the course weeks as announced in the schedule. Please note the field trip exchange week does not necessarily occur near the actual field trip date. Please check the

***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.

schedule for the class this term for the week of the exchange. Geology lectures and laboratory will not occur during the field trip exchange week.

Grading

1,000 pts for the class:

Area A: Methods & Principles

150 pts. In-class laboratory and field projects (collaborative experiences)

50 pts lab participation first ½ of course
50 pts lab participation 2nd ½ of course
*50 pts field workshop participation**

Area B: Concepts

150 pts. Concept quizzes (*take-home, collaborative assessment*)

25 pts Earth Science IQ (individual)
25 pts Seismology
25 pts Plate Tectonics
25 pts Igneous Rocks
25 pts Depositional Environments
25 pts Geologic Time

Area C: Skill Proficiency Areas

100 pts. Proficiency Quizzes

25 pts Topographic Map Quiz (individual assessment)
25 pts Mineral ID Quiz (Individual assessment)
25 pts Rock Classification: collaborative (Individual assessment)
25 pts Geologic Map & Earth Structures Quiz (individual assessment)

Area D: Application & Synthesis

300 pts. Midterm Exam

150 pts Final Exam Part A (take-home)
150 pts Final Exam Part B (in-class individual assessment)

300 pts. Final Exam*

150 pts Final Exam Part A (take-home)
150 pts Final Exam Part B (in-class individual 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 Geology & the Earth 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 Geology & the Earth system significantly above that of the general public; and a basic understanding of the principles of Geology & the Earth system.*
C+ = 730 to 749	**C** = 625 to 730		*Student demonstrates a basic knowledge and understanding of Geology &the Earth 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 Geology & the Earth system beyond that of the general public.*
F < 500			

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 <u>required</u> to attend the field trip and be present at the final examination to receive a passing grade for the course.

Class Schedule Fall 2024

Class Schedule is tentative and subject to change by your professor as deemed necessary. All class readings and material will be available through the Class Canvas Site. This term is eleven weeks long, followed by a final exam. All changes to the schedule will be updated on the Class Site in Canvas.

WEEK Date / Session	**Topic:** Learning Tutorial/Activity/ Assignment	**Reading** *An Introduction to Geology*
PART I: THE DYNAMIC PLANET		
01	*The Study of a Restless Planet*	
09/24	Lecture: *Class Orientation*	
09/26	Lecture: *Science and the Discovery of the Restless Earth*	Chap. 1.0
Lab Session 01	Lab: *Topographic Maps** (printout lab worksheet from online lab manual)	
Due This Week	Pre-Class Earth Science IQ Quiz Sunday 09/29	
02	*The Dynamic Earth*	
10/01	Lecture: *Earthquakes*	Chap. 9.5 – 9.9
10/03	Lecture: *The Tectonic Framework of Planet Earth*	Chap.2.0
Lab Session 02	Lab: *Seismology and the Instrumental Study of Earthquakes.* (printout lab worksheet from online lab manual)	
Important Note:	Last day to drop without a W is Sunday 09/29	
03	*The Heat Within*	
10/08	Lecture: *The Anatomy of a Scientific Revolution*	
10/10	Lecture: *Volcanism*	Chap. 4.5
Lab Session 03	Lab: *Plate Tectonics & Plate Motions* (printout lab worksheet from online lab manual)	
In Lab Quiz **Due This Week**	Proficiency Quiz: Topographic Maps Tuesday Concept Quiz: Seismology Sunday 10/13	

**Note: Students must pre-print the laboratory exercises and bring them with them to lab. All laboratory work shall be kept in a binder and available during the laboratory for reference.*

WEEK Date / Session	**Topic:** Learning Tutorial/Activity/ Assignment	**Reading** *An Introduction To Geology*
04	*The Changing Face of the Earth*	
10/15	Lecture: *Running Water: Stream Erosion and the Evolution of Landscapes*	Chap. 11
10/17	Lecture: *Landscapes of Climatic Extreme: Deserts & Glacial Environments*	Chap. 13 & 14
Lab Session 04A	Lab: *Evolution of an Integrated Stream System* (printout lab worksheet from online lab manual)	
Lab Session 04B	Lab: *Modification of Stream Eroded Landscapes by Glaciation* (printout lab worksheet from online lab manual)	
Due This Week	Concept Quiz: Plate Tectonics Sunday 10/20	
Midterm Exam	Download Midterm Packet and Part A of Exam Available on Monday 10/15 **Part A due next Monday 10/21** *submit online* **Midterm Part B Tuesday 10/22** *in-class exam*	

PART II: WRITTEN IN STONE

05	*The Universe Beneath Each Footstep*	
10/22	**Midterm Exam Part B**	
10/24	Lecture: *Minerals: The Building Blocks of Rocks Part I*	Chap. 3
Lab Session 05	Lab: *Mineral Properties and Identification* (printout lab worksheet from online lab manual)	
Due This Week	Midterm Exam Answers Part A submit through online submission sheet Monday 10/21 closes 11:55 PM PDT Part B in class Tuesday 10/22 *do not be late for the exam*	
06	*The Record of the Rocks*	

10/29	Lecture: *Minerals: The Building Blocks of Rocks Part II*	Chap. 3
10/31	Lecture: *Rocks That Form Underground*	Chap. 4.1-4.4 Chap. 6
Lab Activity 06	Lab: *Rock Textures and Genesis* (printout lab worksheet from online lab manual)	

WEEK Date / Session	**Topic:** Learning Tutorial/Activity/ Assignment	**Reading** *An Introduction To Geology*
07	*Field Trip Exchange Week*	
01/16-01/18	*No lecture or laboratory this week, field trip exchange.*	
08	*Pages of Stone*	
02/27	Lecture: *Sediments & Sedimentary Rocks*	Chap. 5
02/29	Lecture: *Sedimentary Rocks: Keys to Past Environments*	Special Paper: *Sedimentary Environments*
Lab Session 08	Lab: *Rock Genesis & Classification* (printout lab worksheet from online lab manual)	
In Lab Quiz	Proficiency Quiz: Mineral ID Tuesday	
Important Note:	*Last day to Withdraw from class is Friday 11/08*	
09	*Written in Stone*	
11/19 - 11/21	Lectures: *Geologic Time & Interpreting Earth History*	Chap. 7
Lab Session 09	Lab: *Earth Structures Part I: Orientation of Strata* (printout lab worksheet from online lab manual)	
Due This Week	Concept Quiz: Igneous Rocks Sunday 11/24	
10	*Riddle of the Rocks*	
11/26	Lecture: *Earth Structures & Deformation of the Earth's Crust*	Chap. 9.1 – 9.5
11/28	Holiday: Thanksgiving Day *no lecture*	

Lab Session 10A	Lab: *Earth Structures Part II: Folds, Geologic Maps & Cross-sections* (printout lab worksheet from online lab manual)
Lab Session 10B	Holiday: Thanksgiving Day *no lab meeting*
In Lab Quiz	Proficiency Quiz: Rock Classification Tuesday
Due This Week	Concept Quiz: Sedimentary Environments Sunday 12/01

WEEK Date / Session	**Topic:** Learning Tutorial/Activity/ Assignment	**Reading** *An Introduction*
11	*Explorations*	
12/03 – 12/05	In class workshop: Collaborative prep for Final Exam	
Lab Session 11	Lab: Open Lab for Final Exam Prep	
Field Workshop	Field Exercise: *Geologic History of Cliff Exposures at Montara State Beach, California* *Saturday* 12/07 9:15 am to 12:45 pm	
In Lab Quiz	Proficiency Quiz: Earth Structures Tuesday	
Due This Week	Concept Quiz: Geologic Time Sunday 12/08	
12	*Final Exam*	
Final Exam	Download Final Exam Packet and Part A of Exam Available on Monday 12/02 (Week 11) due on Monday of Final Exam Week (12/09/25) 11:55 pm Final Exam Part B see below:	
	FINAL EXAM SCEDULE: GEOL 10	
12	**GEOL 10 Sec. 20** Tuesday: 12/10 Final Exam; 1:45 pm to 2:45 pm	

Enjoy your Winter Break!
But perhaps not too much, Dr. D.

****Notes for Final Exam:***

1. ***Attendance at the Final Exam is <u>mandatory</u>. Students must complete the field requirement and attend the final exam to receive a passing grade.***

2. ***Bring your Exam Packet (Game of Stones Part II) with any notes or interpretations on it to the Final Exam Part B.***

3. ***You must have completed Part A of the Final Exam and turned in your answers PRIOR to starting Part B.***

4. ***You may NOT have a copy of the Part A questions in front of you while taking the Part B portion of the Final Exam.***

5. ***Mark all answers on the ParScore® form (provided) with #2 pencil and have a good eraser to completely erase any changes.***

No student may start the final exam after the time the first student to finish leaves the exam area.

Student Learning Outcome(s):

• Apply the principles of scientific methodology to evaluate hypotheses on how the earth works as an integrated system.
• Use data and observations to track and predict changes in the Earth system resulting from dynamic Earth Processes.
• Use observations from the crust and lithosphere of the Earth to determine geologic history at hand-sample, outcrop, local, and regional scales.
• Apply scientific methodology and geologic principles to analyze the impact of the Earth system on humanity, from specific natural hazards and the availability, use, and distribution of Earth resources.

Office Hours:

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