Welcome to Geology 10

Geology 10: *Introductory Geology*
Spring Quarter, 2022
GEOL 10 (5.0 units)
GEOL 10.55Z, 56Z, 57Z & 58Z
Independent Online Instruction (asynchronous)

De Anza College
Earth and Space Sciences Program

Course website: on Canvas via your De Anza MyPortal
Sp 22 GEOL D10 Introductory Geology

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 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 9:30 to 11:30 am *(Via Zoom)*
Use Canvas Messaging to set up appointment.
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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.

Course Objectives for GEOL 10: Introductory Geology

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.

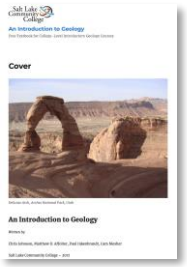
G. Assemble and synthesize geophysical information in order to assess earthquake hazards and to construct plausible models of the Earth's deep interior.

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.

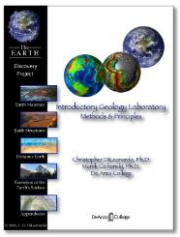
J. Evaluate and assess environmental hazards in a geologic context; assess locations of geologic resources such as mineral deposits and hydrocarbons from geologic data, and appraise the impacts of geologic resource issues on the environment and human populations.

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 virtual lab addition, 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

Weekly Class Modules

A module is specific and discrete learning segment that leads to the understanding of a given topic or set of topics. Modules will be assigned by topic on Canvas. Modules include all assignments that will be completed for a particular topical set. 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.

A Note on Online Learning

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 five-unit lecture-laboratory course. This equates to four hours of lecture and 3 hours of laboratory 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 7-hours a week (not including study time); 2.) Login at least two different days during the week (to stay current in the course); 3.) Prepare the exams using your notes from online learning tutorials, your completed laboratory activities, and your textbook readings.

Lectures Online

Lectures for the class will be pre-recorded. This gives every student the flexibility to view them at their own convenience. This format also allows you to go over the lectures, or look back at them as needed. 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 online lectures, 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 lectures along with readings and laboratory work, 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.

Laboratory Activities

In each module will be an inquiry-based laboratory activity that leverages the learning on that topic. You will commonly write answers down on laboratory worksheets that you will keep in your *Earth Discovery Journal*. Once completed you will answer questions online that I will review regarding the activity you completed. The work in your *Earth 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.

Online Independent Lab Sections (Sec. 55z and Sec. 56z)

Your sections will work completely independently on lab assignments, though you may collaborate with one another if you wish. Each lab will have introductory materials, combination of videos, readings or both. After completing the virtual laboratory module, you will scan it or take pics of each page and upload them to submit via Canvas. Check the lab module page for each week for instructions.

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 important part, especially in an online course where your work is more independent than a face-to-face classroom situation. Each week you will find a link to online readings in your weekly Class Page on the *Canvas* class site. You should engage in these readings prior to watching the *Learning Tutorial* video series.

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.

Academic Policies & 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.

Virtual Field Trip

Students enrolled in *Introductory Geology* will participate in a virtual field trip as part of the course. This activity is a required part of the curriculum for the class. Information will be made available later in the quarter .

A Note About Virtual Laboratories & Field Trips

Every effort in this course is made to construct virtual learning experiences that provide the same student learning outcomes as the course offered in a "face-to-face" format. Virtual field trips and laboratories are created with this in mind. Laboratories exercises will be offered weekly that dovetail with the learning presented in *lectures, and web-textbook* readings. Laboratory activities will follow the same sequence generally offered in face-to-face laboratories. Laboratory exercises can be found on the Canvas class site for each week. Follow the instructions on the site. In most cases you need to download and printout a laboratory activity to follow instructions and record your answers. These will not be collected but are invaluable in preparing for quizzes and the midterm and final exams. I encourage you to create an *Earth Discovery Journal*, a notebook that keeps all of your laboratory,

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

25 pts Earth Science IQ

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 and "Team Challenges" (in-lab)

25 pts Topographic Map Quiz (individual assessment)

25 pts Mine Challenge (Mineral ID: collaborative)

25 pts Geo Detectives Challenge (Rock Classification: collaborative)

25 pts Geologic Map & Earth Structures Quiz (individual assessment)

Area D: Application & Synthesis

300 pts. Midterm Exam

150 pts Midterm Exam Part A collaborative take-home

150 pts Midterm Exam Part B online exam

300 pts. Final Exam*

150 pts Final Exam Part A collaborative take-home

150 pts Final Exam Part B online 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 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 required to complete the virtual field trip and participate in the final examination to receive a passing grade for the course.*****

Class Schedule Spring Quarter 2022

Class Schedule is tentative and subject to change by your professor as deemed necessary. All class activities and material will be available through the Class Canvas Site. Note: Readings and Laboratory Activities can be accessed through the Canvas Class Website. This term is eleven weeks long, followed by a final exam. The schedule may be changed as needed by the instructor during the term. 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 Dynamic Planet*	
04/06– 04/10	Lecture 1-0: *Science and the Discovery of the Restless Earth*	Chap. 1.0
Lab Activity 01	Lab: *Topographic Maps* (printout lab worksheet from online lab manual)**	
Due This Week	Pre-Class Earth Science IQ Quiz Sunday 04/10	
02	*The Dynamic Earth*	
04/11- 04/17	Lecture 2-1: *Earthquakes*	Chap. 9.5 – 9.9
	Lecture 2-2: *The Tectonic Framework of Planet Earth*	Chap.2.0
Lab Activity 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 04/17
03	*The Heat Within*
04/18- 04/24	Lecture 3-1: *The Anatomy of a Scientific Revolution*
	Lecture 3-2: *Volcanism* Chap. 4.5
Lab Activity 03	Lab: *Plate Tectonics & Plate Motions* (printout lab worksheet from online lab manual)
Due This Week	Concept Quiz: Seismology Sunday 04/24

*Lectures" Will be pre-recorded and available on the Weekly class page. Readings and Lectures should be done early in the week and prior in most cases to the lab work for that week. .

WEEK Date / Session	Topic: Learning Tutorial/Activity/ Assignment	Reading *An Introduction To Geology*
04	*The Changing Face of the Earth*	
04/25-05/01	Lecture 4-0: *Running Water: Stream Erosion and the Evolution of Landscapes*	Chap. 11
	Video Presentation: *Waves, Beaches and Coastlines* (Earth Revealed Series)	Chap. 12
Lab Activity 04	*Evolution of an Integrated Stream System* (printout lab worksheet from online lab manual)	
Due This Week	Proficiency Quiz: Topographic Maps Sunday 05/01 Concept Quiz: Plate Tectonics Sunday 05/01	
05	*Landscapes of Change*	
05/02- 05/08	Lecture 5-1: *Landscapes of Climatic Extreme: Deserts & Glacial Environments*	Chap. 13 & 14
	Lecture 5-2: *Climate Change*	
Lab Activity 05	*Modification of Stream Eroded Landscapes by Glaciation* (printout lab worksheet from online lab manual)	
Midterm Exam	Download Midterm Packet and Part A of Exam Available on Monday 05/02 due next Tuesday 05/10 Midterm Part B opens Saturday 05/07 due next Tuesday 05/10	

PART II: WRITTEN IN STONE

06	*The Universe Beneath Each Footstep*	
05/09- 05/15	Lecture 6-0: *Minerals: The Building Blocks of Rocks*	Chap. 3
Lab Session 06	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 Tuesday 05/10 closes 11:55 PM PDT Part B take online by Tuesday 05/10closes 11:55 PM PDT

WEEK Date / Session	Topic: Learning Tutorial/Activity/ Assignment	Reading *An Introduction To Geology*
07	*The Record of the Rocks*	
05/16- 05/22	Lecture 7-1: *Igneous Rocks*	Chap. 4.1-4.4
	Lecture 7-2: *Metamorphic Rocks*	Chap. 6
Lab Activity 07	Lab: *Rock Textures and Genesis* (printout lab worksheet from online lab manual)	
Due This Week	Proficiency Quiz: Mineral ID Sunday 05/22	
08	*Pages of Stone*	
05/23- 05/29	Lecture 8-1: *Sediments & Sedimentary Rocks*	Chap. 5
	Lecture 8-2: *Sedimentary Rocks: Keys to Past Environments*	
Lab Activity 08	Lab: *Rock Genesis & Classification* (printout lab worksheet from online lab manual)	
Due This Week	Concept Quiz: Igneous Rocks Sunday 05/28	
Important Note:	Last day to Withdraw from class is Friday 05/27	
09	*Written in Stone*	
05/30- 06/05	Lecture 9-0: *Geologic Time & Interpreting Earth History*	Chap. 7
Lab Activity 09	Lab: *Earth Structures Part I* (printout lab worksheet from online lab manual)	
Due This Week	Concept Quiz: Sedimentary Environments Sunday 06/05 Proficiency Quiz: Rock Classification Sunday 06/05	
10	*Riddle of the Rocks*	
06/06- 06/12	Lecture 10-0: *Earth Structures & Deformation of the Earth's Crust*	Chap. 9.1 – 9.5

Lab Activity 10	Lab: *Earth Structures* (printout lab worksheet from online lab manual)	
Virtual Field Trip	Virtual Field Trip opens Monday 06/06	
WEEK Date / Session	**Topic:** Learning Tutorial/Activity/ Assignment	**Reading** *An Introduction To Geology*
11	*The Game of Stones*	
06/13- 06/19	Lecture 10-0: *Mountain Building*	
Lab Activity 11	Lab: *Geologic Maps & Cross-sections* (printout lab worksheet from online lab manual)	
Virtual Field Trip	Virtual Field Trip due: Sunday 06/19 11:55 PM PDT	
Due This Week	Concept Quiz: Geologic Time Sunday 06/19 Proficiency Quiz: Earth Structures Sunday 06/19	
Final Exam	Download Final Exam Packet and Part A of Exam Available on Monday 06/13 due next Tuesday 06/21 Final Exam Day Final Exam Part B opens Saturday 06/18 due next Tuesday 06/21	
12	*Final Exam*	
	FINAL EXAM SCEDULE: GEOL 10	
06/21	**GEOL 10 Secs. 55Z, 56Z, 57Z & 58Z** Tuesday (06/21) Final Exam; Closes at 11:55 PM PDT.	

Enjoy your Summer Break!

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.