Syllabus

Physical Geology - Geo 1110 Lecture and Geo 1115 Lab

Instructor:

Office Room:

Emails:

Office Hours:

Class Time:

Face-to-Face Lecture: Tuesday and Thursday 11:30 am to 12:50 pm

Face-to-Face Lab: Tuesday 1:00 to 3:50.

Open Lab: Thursday 1:00 to 4:00.

Class Location: SI - Science & Ind. Bldg 358 (SI-358)

Required Text: *An Introduction to Geology* by Johnson, Affolter, Inkenbrandt, and Mosher. Free online textbook at http://opengeology.org/textbook/ or https://slcc.pressbooks.pub/introgeology/. Both books are identical. The first one is a website and has more interactive features while and second one is good printing as a pdf. The book is mobile-friendly and looks great on a smartphone or tablet. Use the interactive quizzes and interactive figures. Watch the short videos and animations while you read.

Week	Date	Lecture Topic and Chapter	In-Class Lecture Activity; Homework	Lab
1	Tuesday Jan 9	Introductions	Evaluating Sources Homework on Canvas	1 – Physical Properties of Minerals and Interactive Geologic Map
1	Thursday Jan 11	1 – Understanding Science		
2	Tuesday Jan 16	1 – Understanding Science	Scientific Method	2 - Ore Forming Minerals
2	Thursday Jan 18	2 - Plate Tectonics		
3	Tuesday Jan 23	2 - Plate Tectonics		3 – Plate Tectonics and Google Earth
3	Thursday Jan 25	3 - Minerals		
4	Tuesday Jan 30	3 - Minerals		4 - Rocks Forming Minerals and Minerals in Rocks
4	Thursday Feb 1	4 - Igneous Processes and Volcanoes		
5	Tuesday Feb 6	4 - Igneous Processes and Volcanoes		5 - Igneous Rocks; X - Volcanoes and Google Earth
5	Thursday Feb 8	**Guest lecture** Yellowstone Hotspot – Stacy Henderson		
6	Tuesday Feb 13	5 – Sedimentary Rocks		6 - Sediments and Sedimentary Rocks
6	Thursday Feb 15	5 – Sedimentary Rocks		
7	Tuesday Feb 20	6 – Metamorphic Rocks		7 – Metamorphic Rocks
7	Thursday Feb 22	6 – Metamorphic Rocks		
8	Tuesday Feb 27	7 – Geologic Time		8 – Geologic Time

8	Thursday Feb 29	**Exam 1 (Ch. 1-5) in Class**		
9	Tuesday Mar 5	**Spring Break – No Class, Campus Closed**		
9	Thursday Mar 7	**Spring Break – No Class, Campus Closed**		
10	Tuesday Mar 12	7 – Geologic Time		**Lab Exam 1 (Labs 1-7, Rocks and Minerals)**
10	Thursday Mar 14	9 – Crustal Deformation and Earthquakes		
11	Tuesday Mar 19	9 – Crustal Deformation and Earthquakes		9 - Earthquakes and Structural Deformation
11	Thursday Mar 21	9 – Crustal Deformation and Earthquakes	IRIS Videos	
12	Tuesday Mar 26	10 - Mass Wasting		10 - Topographic Maps (Part 1)
12	Thursday Mar 28	**Exam 2 (Ch. 6, 7, 9, and 10) in Class**		
13	Tuesday Apr 2	11 - Water		10 - Topographic Maps (Part 2)
13	Thursday Apr 4	11 - Water		
14	Tuesday Apr 9	14 - Glaciers		11 – Groundwater Contamination
14	Thursday Apr 11	14 - Glaciers		
15	Tuesday Apr 16	15 –Global Climate Change		12 – Stream and Glacial Landforms
15	Thursday Apr 18	15 –Global Climate Change		
16	Tuesday Apr 23	16 – Energy and Mineral Resources		13 - Geologic Maps and Cross-Sections
16	Thursday Apr 25	16 – Energy and Mineral Resources		
17	Tuesday Finals Week	**Final Exam Time 11:20 am to 1:20 pm in the same room**	**Exam 3 (Ch. 11, 14, 15, and 16)**	**Lab Exam 2 (Lab 8 – 13 maps and time), 1:30 to 4:30**

"We learn geology the morning after the earthquake."

– Ralph Waldo Emerson

"Geology is the science which investigates the successive changes that have taken place in the organic and inorganic kingdoms of nature; it enquires into the causes of these changes, and the influence which they have exerted in modifying the surface and external structure of our planet."

— Sir Charles Lyell

Geo 1110 Course Description: This course is an introduction to physical geology for students considering a major in geology or geography. Topics will include rocks and minerals, earthquakes, plate tectonics, volcanoes, and internal and surficial processes, and field sampling. There is an emphasis on hands-on projects and the identification of minerals and rocks.

Geo 1110 Student Learning Outcomes (SLOs): At the end of this course a student should be able to:

- Identify and categorize minerals, rocks, and sediments in class and the field.
- Analyze landform patterns such as mountain chains, volcanoes, earthquakes, and rock types to interpret the plate tectonics setting.
- Analyze rocks and minerals for characteristics of different types of volcanoes, their formation history, eruptive style, plate tectonics, and physical features.
- Read and interpret geologic, topographic, and contour maps; and geologic cross-sections.
- Analyze geologic evidence and the principles of relative and numerical age-dating to determine the past geologic sequence of events of a particular area.
- Compare and contrast the origin and hazards associated with different earthquake magnitudes at different plate tectonic settings.
- Describe how weathering, erosion, deposition, stream processes, shoreline processes, wind, and/or glaciers shape the surficial landscape.
- Diagram and characterize the internal layers of earth, including the chemical and mechanical layers, movement, heat, and magnetic field.
- Evaluate evidence of the effects of human interactions with stream and shoreline processes, energy resources extraction and use, global climate change, and glaciers and sea-level change.

Geo 1115 Course Description: This is the laboratory course for Geo 1110.

Geo 1115 Student Learning Outcomes (SLOs): At the end of this course a student should be able to:

- Identify and categorize minerals, rocks, and sediments in the lab and the field.

- Analyze landform patterns on maps, air photos, or digital media such as mountain chains, volcanoes, earthquakes, and rock types to interpret the plate tectonics setting.
- Analyze rocks and minerals for characteristics of different types of volcanoes, their formation history, eruptive style, plate tectonics, and physical features.
- Read, draw, and interpret geologic and topographic maps; and geologic cross-sections.
- Analyze geologic evidence and the principles of relative and numerical age-dating to determine the past geologic sequence of events of a particular area.
- Analyze earthquake data to determine location, magnitude, and relationship with different plate tectonic settings.

Attendance Policy:

- Regular and prompt attendance is expected at all classes. Regular attendance and consistent study habits are necessary for success in college. Faculty members have the prerogative of lowering grades for excessive absence.
- Attendance will be taken verbally at the beginning of class.
- Attendance is required at least once during the first week of class, otherwise, the student may be dropped from the class if there are students on the waitlist. It is the student's responsibility to drop the class if they are no longer interested in remaining in the course.
- You must come to class on time. Coming in late is highly disruptive.

Electronic Devices Policy:

- All electronic devices such as phones, laptops, and tablets are not allowed during lectures. During the lecture, students will practice taking hand-written notes.
- During activities and labs, or other special discussion topics, I encourage you to use your electronic devices to explore concepts.

"Change is the only constant." "You cannot step twice into the same river."

- Heraclitus

"Rocks are records of events that took place at the time they formed. They are books. They have a different vocabulary, a different alphabet, but you learn how to read them."

- **John McPhee**

How to succeed in this course:

- **Attendance**: Come to every class and come on time. Treat school like work.
- **Professional behavior:** I expect students to conduct themselves professionally. This means coming to class on time, being respectful of other student's questions and comments, and not talking when someone else has the floor. If you cannot respect

these policies, then you may be asked to withdraw from the course and/or be dropped. Coming in late is disruptive to the other students and important announcements are covered in the first few minutes of class.

- **Textbook**: You need to have access to a computer, tablet, or smartphone to read the free online textbook.
- **Lecture Notes**: Lecture notes that are based on my PowerPoint presentation will be provided electronically on Canvas.
- **Exams**. A study guide will be provided.
- **My Weekly Expectations:** You should dedicate about 6 hours per week to work outside of class time. Most of your learning for this major's class will occur by doing the project activities and reading text followed by chapter quizzes. The focus of this class will be in-class hands-on activities involving rock samples, maps, and a research project. The reading and quizzes are to keep you on track with reviewing the material in the textbook BEFORE we work on projects in class.
- Talk to your instructor at any time or during office hours about how to succeed in this course and improve your study skills.

Assignments:

- **Chapter Reading and Quizzes**- Students will read the chapter for that week BEFORE I lecture on it, take notes on the chapter, and take a quiz on Canvas BEFORE we discuss the chapter in class. Some quiz questions will be related to the "Did I Get It?" questions embedded in each chapter but others will be word problems or maps requiring critical thinking and analysis. Canvas is the college's electronic learning management software where the content for this class is hosted. The quiz duration is will be about 30 minutes and is open book. However, you should read the text BEFORE starting the quiz.
- **In-Class Assignments/Projects:** Be prepared to work on in-class assignments and projects that will mostly (but not all) be linked to lab activities. Having your textbook and lab materials in class will help you with these activities. So, we will use some lecture class time to work on lab materials. Some of these may be take-home activities, pre-labs, or assignments due at the end of class.
- **Final Project:** Students will choose one of these two options for a final project. Talk with your instructor about your project.

    - **Self-Guided Field Trip Assignment:** Students will select an outdoor area of their choice (such as Little Cottonwood Canyon, G.K. Gilbert Geologic View Park, Antelope Island State Park, etc.), discuss the location with the instructor, do a literature review of the geology of the area, visit the area and document with photographs the geology. Students will write a research paper on the geology of area that blends what they read in their literature review (80%) with their observations (20%). Detailed information on this assignment will be provided within the first few weeks of the semester.
    - **Independent Research Project:** For this project, students will work alone or in small groups of three or less to conduct a real research project.

        - Your instructor will provide a list of research projects for you to choose from or you can design your own with the help of your professor. With the help of your professor, students will refine their research questions or hypotheses, develop their method for testing the research question or hypothesis in the field or lab. Interpret results and write up a research-style paper.
        - These projects will leverage our analytical capability so they will likely focus on collecting soil or water samples for analysis in the lab or field. Students will also make maps of these data as part of their analysis. Details on this project will be provided within the first two weeks of class.
- **Students should consider enrolling in Geo 2350.**

- **Laboratory Projects:** Every week we will have a lab activity that will make up the core part of both classes since this class is designed as a hands-on project-based class. Activities will cover one or two weeks' worth of material. Labs will be provided mostly electronically via Canvas on the Geo 1115 site and not the Geo 1110 site. Students will be expected to print them out and bring them to class unless the lab is not posted by the professor, which will happen sometimes. We will introduce and/or work on some of the lab activities in the lecture class. You will turn in the lab the following week after taking it home to finish it or work on it during Open Lab, ask your instructor about the schedule. Each weeks' worth of lab is 10 points and makes up approximately half of your lab grade. Each week we may have one or two labs of varying lengths, but each week is worth 10 points, so if there are two labs in one week, each will be worth 5 points. This grade is separate from the lecture class Geo 1110. The content between the two classes is linked but grades are separate. Lab exams will require you to do the same type of work, often with identification tables, but you'll have to do the exams alone. The labs are your opportunity to practice for the exams which have a much larger impact on your grade.

Make-up and Late Policy:

- You CANNOT make up any Canvas quizzes. Of the three lecture exams, the lowest score will be dropped from the final grade calculation. There are only two lab exams, and make up lab examas will be marked down 20 points per calendar day late starting at the regular exam time. So, if the late exam is taken the same day but late, then 20 points will be taken off.
- Late assignments will have some sort of penalty. Assignments submitted late in Canvas will be marked down automatically by Canvas 3% per calendar day late. Hard copy assignments turned in late such as labs and in-class activities will have a more ambiguous penalty such as maybe 10% or 50% reduced depeneding on how late they are.

How to Calculate Your Grade:

Grading Scale:

A	> 95%
A-	90-95%
B+	87.5-90%
B	80-87.5%
B-	77.5-80%
C+	75-77.5%
C	70-75%
C-	67.5-70%
D+	65-67.5%
D	60-65%
D-	58-60%
E	<58%

To determine your grade percentage, sum the total points possible and total points you received. Divide the total points you received by the total points possible and multiply the answer by 100%. For example, Bill received an 80 out of 100 points on his first test, and 10 out of 20 points for five quizzes. His total is 90 points out of 120 possible points. 90 divided by 120 = 0.75. Then, take 0.75 x 100 % = 75% a grade of "C".

LECTURE - Grading Scale and Distribution:

Exam 1	100 points
Exam 2	100 points
Exam 3	100 points
Quizzes (5 points each)	approx. 60 points
Final Project	100 points
Other assignments	approx. 50 points

Total Points* 510 points

After dropping the lowest exam score, **Total Points 410 points**

*Total points are approximate as additional assignments will likely be added during the semester. Actual points and grades will be posted on Canvas. Always check your Canvas grade and do your own calculations as Canvas grade errors can occur. More assignments generally benefit students since the exams tend to be difficult.

LAB - Grading Scale and Distribution:

Exam 1 100 points

Exam 2 100 points

Labs (approx. 10 points ea.) approx. 140 points

Total Points* 340 points

*Total points are approximate as additional assignments will likely be added during the semester. Actual points and grades will be posted on Canvas. Always check your Canvas grade and do your own calculations as Canvas grade errors can occur. More assignments generally benefit students since the exams tend to be difficult

ACADEMIC DISHONESTY

Academic dishonesty will not be tolerated and includes all forms of cheating and plagiarism as outlined in the Student Code. Cheating will be dealt with as harshly as allowed by the college *on the first instance*, which includes your being failed from the class.

Although I encourage students to work together on some assignments, you must turn in your own assignments with your own answers in your own words. You are responsible for your own work. If you plagiarize an exam or assignment you will receive a grade of "F" on the material or exam and a possible "F" in the class. For field trip reports, you must take your own photos, make your own notes, and cite your references correctly.

Cheating includes:

- copying from another's test, assignment, or lab; or obtaining answers from another person during the test
- submitting work previously presented in another course, if contrary to the rules in either course
- using or consulting during an examination sources or materials not authorized by the instructor
- using a cellular phone, text messaging device, digital camera, iPod, or other electronic devices
- that can convey information during an examination
- altering or interfering with grading or grading instructions
- deliberately altering or interfering with examination materials, such as lab exam setups
- sitting for an examination by a surrogate, or as a surrogate
- talking or consulting with another person (except the instructor) during an examination
- giving information to, or receiving information from, another student that provides the recipient with an undeserved advantage on an examination, such as sharing information about an exam with a student in another section, or telling a student what to expect on an alternative exam
- any other act committed by a student in the course of his or her academic work which defrauds or misrepresents, including aiding or abetting in any of the actions described above.

Plagiarism includes:

- incorporating the ideas, words, sentences, paragraphs or parts thereof, or the specific substance of another's work, without giving due credit, and representing the product as one's own work. (Note that this includes copying or using the same words as another student on a written assignment, even if you were permitted to work together on the assignment. You must write in your own words.)
- representing another's artistic, scholarly, or similar works as one's own.

See the Institutional Syllabus in the Modules section for details on the following: ADA accommodations, Title IX policy, student code of conduct, incomplete grades, tutoring center, writing center, other institutional policies, emergency evacuation procedures, and advising and counseling services