

Geology 201: Physical Geology I (4 credits), Fall 2019

Instructor: Dr. Ben Stanley

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Office hours: M and W 2:30-3:30 pm, or by appointment

CRN: 23768

Class meeting times: M and W 1:00-2:20 pm, F 1:00-2:50 pm in MH 108

Welcome to Geology!

In this course we will explore the rocks and minerals that make up the Earth, and how the plates move to create beautiful landscapes and terrible disasters. This class is not about memorizing the names of 100 different rocks and how to distinguish them. Instead, it's about a way of looking at the world around you and learning how to be confident in your observations and interpretations of that world.

Course Goals:

- To better understand the natural world. The knowledge you build in this course will encourage you to become more curious about how the Earth works.
- To have a general knowledge of science so you can make more informed decisions as a contributing member to society.
- To develop and improve study skills, and other life-long skills such as problem solving, critical thinking, oral communication, and group work. I hope that the skills you learn and refine in this class will carry over into your other classes and your personal life.

Course Description

Introduces physical geology and fundamental geologic principles. Topics include Earth's interior, tectonic processes, and their influence on mountains, volcanoes, earthquakes, rocks and minerals. Laboratory component highlights rocks, minerals, and geophysical data. No previous geology or science background is needed to be successful in this course. Geology courses do not need to be taken in sequence. Prerequisite: Math 75. Counts as Physical Science Perspective for AS/OSU degrees and Science with Lab for AAOT degree. This course transfers directly as GEO 201 at OSU.

Course Learning Outcomes

At the end of the course, a student will be able to:

- Describe the process of scientific inquiry in the context of plate tectonic theory.
- Solve quantitative problems resulting from plate tectonic processes
- Classify and identify important Earth materials
- Use plate tectonic theory to explain geologic processes that occur on and below the surface of Earth

Learning Resources

- **Textbook:** Physical Geology, by Steven Earle, BC Open Textbooks (free, open-educational resource)
 - Textbook URL: <https://opentextbc.ca/geology/>
 - Geoscience Videos: https://www.youtube.com/channel/UCtQfVk8PDyHU6e9q_1cEY0Q
- **G201 Course packet**, by Deron Carter
- **Moodle.** This is our online class hub: you will check grades, review syllabus and powerpoints, and submit homework assignments.
- **OPTIONAL Hand lens:** The Hastings Triplet 10x, ~\$35 on Amazon. Totally optional, but highly recommended for geology majors or rock hounds.

Grading (subject to change)

3 comprehensive exams (100 pts each) =	300 points	57.14%
Labs (including field trip or article review, and online lab quiz, 10 points each) =	100 points	19.05%
Online Video Quizzes =	75 points	14.29%
In-class quizzes =	50 points	9.52%
Total =	525 points	

Grading Scale

A = 100-90% (525-473 points)

B = 89-80% (472-420 points)

C = 79-70% (419-368 points)

D = 69-60% (367-315 points)

F = below 60% (below 315 points)

Comprehensive Exams: There are three exams. Exam 1 covers weeks 1-3. Exam 2 covers weeks 1-6. Exam 3 covers weeks 1-10. The first two exams will be administered as a 2-stage “pyramid” tests. You will have a set period of time to take the exam individually, turn it in, then retake the exam with a group of students in the class (graded 80% for the “solo” effort and 20% for the “group” effort). Your group score cannot lower your grade, meaning if you do better solo that will be your entire grade. If you know you will be absent on an exam day let me know ahead of time to schedule a make up. Once exams are returned, they cannot be made up. Exam 3 will be completed individually; no “pyramid” format. You will be allowed one 3x5” note card (front and back).

Lab exercises and lab quiz: Labs occur each week and are due at the beginning of the next class. One lab is a field trip to Marys Peak (see more below). Late labs are not accepted. Labs cannot be made up, but I drop your lowest score. There will be one online rock and mineral identification lab quiz that cannot be dropped. **If you miss more than 3 labs you will fail the course due to the lab focused nature of this course.**

Marys Peak Field Trip. This field trip will take place Saturday, October 12, from 1-5 pm. Limited transportation is available if you cannot drive yourself. The field trip may include a short 1 mile hike up Marys Peak. Marys Peak requires a \$5 parking fee. We will try to arrange carpooling in class. If you cannot attend the field trip, you may complete a make up assignment. The field trip departs from LBCC at 1 pm in front of the Activities Center.

Online Video Quizzes: Before each class on Monday or Wednesday, you will watch a short 5-7 minute video and then complete a short quiz in Moodle. These videos will preview what we cover in class. Quizzes are open the week before they are due. You may take the quiz two times, and quizzes always close at 12:30 pm. Each quiz is worth 5 points. Late work is not accepted.

In-class quizzes: Most weeks we will have a short in-class quiz on Monday, covering previous material in class. These “low stakes” quizzes are designed to help you practice and prepare for the “higher stakes” exams. Your lowest quiz is dropped. If you know you will be absent on a quiz day, please let me know beforehand to schedule a make up.

Campus Resources

Many resources such as the Library, Student Help Desk (for computers and software) Learning Center, the Writing Desk, and Family Connections, are available to you as a student. They are described on the LBCC website.

Any student who has difficulty affording groceries or food, or who lacks a safe and stable place to live, is urged to contact the **Roadrunner Resource Center (T-112):** www.linnbenton.edu/rcc. Furthermore, please talk with your instructor if you are comfortable doing so. This will enable them to provide any resources that they may have.

LBCC is committed to inclusiveness and equal access to higher education. If you have approved accommodations through the **Center for Accessibility Resources (CFAR)** and would like to use your accommodations in this class, please talk to your instructor as soon as possible to discuss your needs. If you believe you may need accommodation but are not yet registered with CFAR, please visit the CFAR website at www.linnbenton.edu/cfar for steps on how to apply for services or call 541-917-4789.

Statement of Inclusion

To promote academic excellence and learning environments that encourage multiple perspectives and the free exchange of ideas, all courses at LBCC will provide students the opportunity to interact with values, opinions,

and/or beliefs different than their own in safe, positive and nurturing learning environments. LBCC is committed to producing culturally literate individuals capable of interacting, collaborating and problem-solving in an ever-changing community and diverse workforce. LBCC is an equal opportunity educator and employer.

Your responsibilities:

1. **Be prepared** for class by watching the assigned Geoscience Video and taking the quiz.
2. If you absolutely **MUST** be **absent**, please let me know ahead of time. You may or may not be able to make up the work done in class.
3. **Actively participate** in class. Ask questions when you are confused and stop me if there is a topic that wasn't covered completely.
4. **Check the Moodle** website regularly to stay updated with current class information and due dates.
5. **Be on time**, stay for the entire class, listen, and contribute. If you are absent, please let me know as soon as possible.
6. **Honor Code Considerations:** This class is highly collaborative; however, there are expectations for individual work as well. If it is ever unclear to you, please ask. Any cheating, plagiarism, etc., may result in a zero and possible recommendation to the administration for further consequences.

My responsibility:

I am here to help you learn. I want each and every student to succeed in this class. Only you can do the learning, but expect me to be available for help during class and office hours and to facilitate the learning process.

Thanks, Ben

COURSE SCHEDULE (subject to change):

Due dates or holidays in bold face

<u>Week and Reading</u>	Monday	Wednesday	Friday
<u>1</u> Ch. 1.1.-1.3, 9.4	Introductions	OVQ 1 due: Scientific process	<u>Lab:</u> Intro to Physical Geology
<u>2</u> Ch. 1.5, 10.4 through divergent boundaries	OVQ 2 due: In-class Quiz 1 Tectonic plates and Earth's interior	OVQ 3 due Divergent Boundaries	<u>Lab:</u> Discovering Plate Boundaries Saturday: Mary's Peak Field Trip, 1-5 pm*
<u>3</u> Ch. 10.4, 10.5	OVQ 4 due In-class Quiz 2 Convergent boundaries	OVQ 5 due Transform boundaries, history of NA continent	<u>Lab:</u> Hot spots and Plate Movement
<u>4</u> Ch. 2	EXAM 1	OVQ 6 due Earth's elements and silicate minerals	<u>Lab:</u> Mineral Properties
<u>5</u> Ch. 3	OVQ 7 due In-class Quiz 3 Igneous rocks	Magma formation, crystallization, and plutons	<u>Lab:</u> Igneous Rocks
<u>6</u> Ch. 6 and 7	OVQ 8 due In-class Quiz 4 Sedimentary rocks	OVQ 9 due Metamorphic rocks and the rock cycle	<u>Lab:</u> Sedimentary and Metamorphic Rocks
<u>7</u> No reading	NO CLASS VETERAN'S DAY	EXAM 2	<u>Lab:</u> Earthquake recurrence in Cascadia
<u>8</u> Ch. 9.1, 11, 12.3-12.4	OVQ 10 due Faults and earthquakes	OVQ 11 due Seismology and earthquake hazards	<u>Lab:</u> Earthquake Analysis
<u>9</u> Ch. 4	OVQ 12 due In-class Quiz 5 Magma viscosity of volcano types	OVQ 13 due Volcanic hazards and monitoring them	NO CLASS THANKSGIVING
<u>10</u> Ch. 8, 12.2	OVQ 14 due In-class Quiz 6 Unconformities and relative dating	OVQ 15 due Radioactive decay, numerical dating, age of Earth	<u>Lab:</u> Folds on Geologic Maps
<u>Finals week</u>	EXAM 3 12/09 1:00-2:50 pm MH 108		

***OVQ (online video quiz) is submitted on Moodle by 12:30 pm on the due date.**

See Moodle for the video to watch.*

Quizzes are completed at the beginning of class on the date assigned