

University of Montana

ScholarWorks at University of Montana

University of Montana Course Syllabi, 2021-2025

Spring 2-1-2022

GEO 103N.50: Introduction to Environmental Geology

Natalie Bursztyn

University of Montana, Missoula, natalie.bursztyn@umontana.edu

Follow this and additional works at: <https://scholarworks.umt.edu/syllabi2021-2025>

Let us know how access to this document benefits you.

Recommended Citation

Bursztyn, Natalie, "GEO 103N.50: Introduction to Environmental Geology" (2022). *University of Montana Course Syllabi, 2021-2025*. 417.

<https://scholarworks.umt.edu/syllabi2021-2025/417>

This Syllabus is brought to you for free and open access by ScholarWorks at University of Montana. It has been accepted for inclusion in University of Montana Course Syllabi, 2021-2025 by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.

Introduction to Environmental Geology: Geo 103, Spring 2022

Contact information

Instructor: Dr. Natalie Bursztyn

Office: CHCB 367

Email: natalie.bursztyn@umontana.edu

Phone: (406) 243-5778

Office hours: MW 12:30-2pm in my office, or via Zoom if you contact me (I will send you a link). Please do not hesitate to contact me to set up a meeting at another time

Teaching assistants: Carson Broaddus carson.broaddus@umconnect.umt.edu

Ashlesha Khatiwada ashlesha.khatiwada@umconnect.umt.edu

Course description:

The fundamental goal of this course is to formally introduce you to your planet (the Earth), the natural processes that shape your world and help you understand how you and your planet interact. In this course we will cover the basics of geology from the formation of the Earth and processes that continue to change the Earth's surface to groundwater processes to geologic resource location and extraction. However, while we cover this material, we will focus on how humans are affected by these processes as well as the effect of human actions on these processes.

Learning Outcomes:

After completing this course, you will be able to:

1. Explain general principles of environmental geology including:
 - a. Spatial and temporal scales of the Earth
 - b. The Earth's principle materials (minerals, rocks, water, air)
 - c. Causes and controls of natural hazards
 - d. Sources and fate of water and air pollution
 - e. How we get energy, water, and food
 - f. How humans effect these systems
2. Explain the basic cycles controlling Earth processes
3. Explain how humans modify natural cycles, the consequences of those modifications, and the ways that we try to mitigate those consequences
4. Identify basic methods and activities geologists use to gather, validate, and interpret environmental data
5. Demonstrate basic data interpretation skills including formulating hypotheses, detecting patterns in environmental data, testing hypotheses and drawing conclusions
6. Explain the means by which uncertainty is quantified and expressed in environmental geology including describing what is meant by scientific uncertainty and how uncertainty is incorporated into environmental geology.

Required textbooks:

The following textbooks are free open access resources. All readings will be assigned from these texts. Topics and chapters will be specifically selected from each: you are not expected to read the entirety of all these e-books (but you can if you want to).

- [Environmental Geology](#)
- [Introduction to Geology](#)
- [Environmental Science](#)

Course Calendar:

Week	Topic	Reading	Assignment
1	<i>*MLK holiday</i> Introduction: Earth systems, Earth in space, and humans	Chapter 1	OJ1
2	Earth Materials	Chapter 2.1, 2.2 Chapter 10	OJ2
3	Relative age, plate tectonics	Chapter 7.1 Chapter 2	OJ3
4	Plate tectonics, earthquakes	Chapter 6	<i>Start QA1</i>
5	Earthquakes, volcanoes	Chapter 7	QA1
6	<i>*President's Day</i> Fresh water	Chapter 11	Exam 1
7	Oceans, coasts	Chapter 12	OJ4
8	Flooding, mass wasting	Chapter 13 Chapter 5	QA2
9	Atmosphere, deserts	Chapter 15 Chapter 13	OJ5
10	Glaciers, global climate	Chapter 4 Chapter 3	OJ6
11	Mineral and energy resources	Chapter 8.1-8.3	Exam 2
12	Fossil fuels	Chapter 8	QA3
13	Renewable energy part 1	Chapter 9	OJ7
14	Renewable energy part 2	Chapter 9	OJ8
15	Waste management and sustainability	Chapter 14	OJ9
16		Review	Exam 3

Required assignments and exams:

30% Exams (3)

30% Quantitative assignments (3)

30% Observation journal (9)

10% Discussion forum participation

Assignment expectations

Discussion: For full credit on discussion forums you are expected to contribute once per week. Themes and resources will be provided for you to comment and reflect upon throughout the class. Contributions should be a combination of questions, reflection or tangential thoughts related to the provided themes/materials, or responses to your peers.

Quantitative assignments: You will have three (3) quantitative assignments throughout this course, each linked to specific topics and with guided tutorials to help you with the computing. These are designed to show you how scientists quantify nature and get you comfortable using excel to do calculations for you.

Observation journal: You will have an ongoing observation journal to connect the course material with the world in which you live. This journal will require you to make observations and sketches outside, make interpretations, and reflect throughout the course. You will submit nine (9) entries throughout the term.

Deadlines: Deadlines are all posted within the assignment on Moodle. Late assignments will be accepted with a penalty of 10% per day. It is better to turn in something than turn in nothing, but in the real-world lateness means dollars lost, so you will be "fined" accordingly.

Exams: There are three exams in this course, one at the end of each "theme". Exams will be administered through Moodle and questions will be a combination of multiple choice and short answer. Questions will be derived from both your readings and your assignments. Exams will be open note, but timed.

Course guidelines and policies:

Student Conduct

Academic integrity: All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the [Student Conduct Code](#).

Communication: Please note that I will only use your official UM email address for communication. This is required by UM to comply with FERPA (the Federal Educational Rights and Privacy Act). It is your responsibility to make sure you read messages sent to your UM email address in a timely manner.

Studying & time expectations: A standard benchmark for a college course is 2-3 hours of work outside of class for each hour in class. This means that for our 3-credit class, you should plan to spend 6-9 hours per week outside of class on reading the textbook chapter, doing assignments and other forms of study.

Discussion forum on Moodle: you are expected to be regularly active in the class discussion forums set up for this class. Contribute often, ask questions, be reflective, share neat things that you find that are tangentially related! When participating in our online discussions please be considerate and kind online. Be respectful in your spoken words and videos. If there are several students in Zoom room hours, please use the raise hand function and keep your mic on mute until you are called on.

Attendance

Attendance cannot realistically be tracked in an online/blended environment. I have set up activity tracking in Moodle so that I can see if you haven't looked at or completed any readings for the class. Good for you for reading this far and this closely in the syllabus. As a reward you should send me an e-mail telling me your favorite flavor of ice cream and earn early extra credit points. The university attendance policy can be found [here](#).

Disability modifications

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the [Office for Disability Equity \(ODE\)](#). If you anticipate or experience barriers based on disability, please contact the ODE at 406.243.2243, ode@umontana.edu for more information. Retroactive accommodation requests will not be honored, so please, do not delay. As your instructor, I will work with you and the ODE to implement an effective accommodation, and you are welcome to contact me privately if you wish.

Grading policy

This course must be taken for a traditional letter grade to meet the Natural Sciences General Education requirement. A minimum final grade of C- is required to meet the Gen Ed requirement. The following grading scale may be adjusted at my discretion.

A	A 94-100%	Outstanding	Your work was exceptional : you have mastered the material. You consistently demonstrated an excellent understanding of all aspects of the course. You went above and beyond the requested outputs and offered unique insights and ideas. Your work exceeds my expectations for what I believe a student should demonstrate.
	A- 90-93%		
B	B+ 87-89%	Good to very good	You have grasped the material . Your work was complete, clear and understandable, and you consistently showed a strong understanding of the material. Your work meets my expectations for what I want students to take away from this course.
	B 83-86%		
	B- 80-82%		
C	C+ 77-79%	Satisfactory	You completed the material . You were able to grasp the majority of the concepts in the course; and demonstrated some ability to apply those concepts.
	C 73-76%		
	C- 70-72%		
D	D+ 67-69%	Barely satisfactory	Your work in the class was barely acceptable . Either you failed to complete some assignments, or your grasp of the course material was weak and incomplete.
	D 63-66%		
	D- 60-62%		
F	59% or less	Unsatisfactory	Your work was unacceptable . You did not learn the material.