

SCIENCE ED 202: MATTER & ENERGY IN EARTH SYSTEMS

Winter 2021

Syllabus

Course Information

Modality: Remote synchronous
Time: MWF 10:00 – 11:30 am
Location: Zoom <https://wwu-edu.zoom.us/j/92259188365>
Textbook: *Matter & Energy in Earth Systems*
Available as a PDF on Canvas
Credits: 5 credits

Instructor Information

Instructor: Dr. Robyn Dahl
Email: dahlr4@wwu.edu (this is the best way to contact me)
Office Hours: Tuesday 12:30 – 2:00 pm <https://wwu-edu.zoom.us/j/92529432592>
Friday 2:00 – 3:00 pm <https://wwu-edu.zoom.us/j/91402700965>
Or by appointment
All office hours are virtual via Zoom

TA: Alena Eldridge
Email: eldrida3@wwu.edu
Office Hours: Wednesday 9:00 – 10:00 am

Course Overview

This course is a guided, inquiry-based study of geology and the geological processes occurring all around us. We will focus on the amazing transfers of energy and mass inside Earth that cause rocks to change form, plates to collide, volcanoes to erupt, and earthquakes to destroy buildings. This is an activity-based course with three major goals:

1. **Geologic Content:** to help you develop a deep understanding of geologic concepts that can be used to explain natural phenomena that are included in the elementary education science curriculum.
2. **Nature of Science:** to help you practice and develop an understanding of: a) how knowledge is developed within a scientific community, b) how doing science involves using evidence and creative thinking, c) how knowledge is established through collaboration and consensus, and d) that science knowledge can change over time.
3. **Learning About Learning:** to help you become aware of how your own understanding of geology has changed and developed over time, and how the structure of a learning environment and curriculum facilitate these changes.

Student Learning Outcomes

By the end of this course, you will:

1. Appreciate that science is a universal language that transcends race, cultures, and geography.
2. Experience different learning styles through group work in discussion and laboratory activities.

3. Believe that scientific literacy is possible for any person.
4. Learn about your own and your peers' science learning.
5. Read and interpret scientific data presented graphically.
6. Formulate hypotheses and predictions.
7. Construct models explaining the components of systems and their interactions.
8. Demonstrate understanding that sufficient data and multiple fundamental scientific theories are needed to explain complex systems, and that these theories evolve.
9. Use the concept of energy as a powerful tool for looking at the relationships of Earth Systems and their changes over time.
10. Understand how the transfer of heat from the interior of the Earth toward the surface causes slow changes in the position of Earth's plates (e.g., the formation of mountains and ocean basins).
11. Understand that physical evidence, such as fossils, the relationships between rock units, and radioisotopic dating, provide evidence for the Earth's evolution and development.
12. Understand how energy interactions and changes are fundamental in explaining the dynamics of living organisms, the Earth, and the universe.

Course Format

This course will be meeting under a “remote synchronous” modality, meaning that we will meet three times per week on Zoom. The majority of your course will be completed during these synchronous Zoom meetings but you will need to complete some work, including homework assignments, on your own.

Under “normal” (i.e., non-pandemic) conditions, this course is based on a **collaborative learning** model that centers small group discussions. The goal of using this model is to leverage the wide range of prior knowledge and different styles of thinking and problem solving that we, as a learning community, possess. We will try our best to recreate this type of learning model in a remote environment by using breakout rooms, structured group discussions, and other types of sharing.

Collaborative learning requires a commitment from everybody involved. In other words, your success relies on your classmates participation and engagement, and theirs relies on yours in return. We are learning together. For this reason, **you are expected to attend all class meetings**. We will be taking attendance each class meeting. You may miss two class meetings for any reason, no questions asked (though you must inform me that you will be missing as soon as you know). After two missed meetings, your participation grade will drop by 10% for each unexcused missed meeting.

I understand that this is a stressful and complicated time for all of us and that learning in a remote environment is challenging. I want to provide as much flexibility as possible in order for you to be successful in this course.

Class Meetings: During class meetings, we will work collaboratively through lessons.

Homework: Homework will consist of finishing activities started during class meetings and completing worksheets and short assignments that build on the material we cover in class.

Learning Commentaries: Short reflections due at the end of each unit that give you the opportunity to identify and examine *how* you learned a new concept. More information about learning commentaries will be available on Canvas.

Unit Quizzes: There will be four quizzes given at the end of each unit throughout the term. Because the pace of the course varies based on collaborative work, I cannot predict the exact date that each quiz will be given, but I will make sure you have at least one week between when the quiz is announced and when it is given. The quizzes will be given on administered on Canvas will each have a 2 hour time limit. Each quiz will be available throughout the whole day so you can take it during any two-hour time window that works for your schedule.

Please let me know ahead of time if you have a scheduling conflict. Quiz 4 will be given on the day that our final exam is scheduled, but it is NOT cumulative.

Participation: Your participation grade will be evaluated based on your attendance and your participation/engagement during class meetings. Your participation score will be updated at the end of each unit and you are encouraged to meet with me if you notice a drop in your score.

Instructor Availability

I am available to answer questions and discuss course material with you via several methods. The easiest way to contact me is by email or by visiting one of my open office hours. You are also welcome to schedule a virtual meeting with me if the open office hours do not work with your schedule.

I am available for email, discussions and meetings during regular work hours (Monday-Friday, 9:00am to 5:00pm). If you contact me during that time, you can expect a prompt response. If you email me in the evening or over the weekend, I will most likely read your email but will not respond until the next workday, unless there is a time-sensitive reason to reply immediately. This is my policy because it is important to set clear boundaries between work and life when we are all working at home.

Grades and Grading Policies

COVID-19 Policy: In accordance with the WWU Winter 2021 COVID-19 Grading Policy, students may designate a course as Pass / No Pass (P/NP) by submitting a request with the Registrar's Office after registering for the course. They may change this designation by submitting the change to the Registrar's Office any time through the seventh week of the quarter. Students may be advised to stay with a letter grade if required for accreditation, veteran status and benefits, or other purposes.

P/NP Grades: Undergraduate students opting for a P/NP grading this Winter Quarter 2021 will receive an EP (pass, exception circumstance) for grades of D+ and above. A grade of D or D- will be recorded as an NP (no pass), which will not earn credits or be reflected in the GPA. A grade of F will be recorded as NP on the transcript, will not receive degree credit, and will not be reflected in the GPA. By choosing not to opt for P/NP grading, a student may have a D or D- reported to their transcript, which will earn credits and be reflected in the GPA.

Final Grades: Your final grade will be calculated using the following weighting.

Participation:	15%
In-Class Activities & Homework:	40%
Learning Commentaries:	15%
Unit Quizzes:	30%

Late Assignments: Late assignments submitted within 3 days of the due date will be accepted but penalized by 10% (i.e., if you scored 100%, you would receive a 90%). Assignments submitted later than 3 days after the due date will be penalized by 50%.

Academic Honesty Policy

In this course, all students are held responsible for upholding all aspects of WWU's [Academic Honesty Policy](#) and the [Student Conduct Code](#).

Disability, Equitable Access, and Accommodations

This course is intended for all WWU students, including those with visible or invisible disabilities. Students with disabilities will be provided equitable access to educational experiences and opportunities. If, at any point in the

quarter, you find yourself not able to fully access the space, content, and experience of this course, please first contact the Disability Access Center (DAC) to discuss potential accommodations. Faculty and staff partner with the DAC in the implementation of accommodations.

If you already have accommodations set up through the DAC, please be sure to send your Faculty Notification Letter through the myDAC portal, and reach out to the DAC so they can discuss how your approved accommodations apply to this course.

If you are unsure if accommodations are appropriate for you, contact the DAC for more information, temporary assistance, or connections to other resources:

<https://disability.wvu.edu> or 360-650-3083

Religious Accommodations

WWU provides reasonable accommodation for students to take holidays for reasons of faith or conscience or for organized activities conducted under the auspices of a religious denomination, church, or religious organization. Students seeking such accommodation must provide written notice to their faculty within the first two weeks of the course, citing the specific dates for which they will be absent. "Reasonable accommodation" means that faculty will coordinate with the student on scheduling examinations or other activities necessary for completion of the course or program and includes rescheduling examinations or activities or offering different times for examinations or activities. Additional information about this accommodation can be found in [SB 5166: Providing religious accommodations for postsecondary students](#).