



GEOLOGY 306: MINERALOGY

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Darian's Office Hours: Tuesday: 1pm-2pm;
Thursday: 11am-12pm. Or by request - I'm in my office often!



Minerals form due to changing environmental conditions. Through the history of the Earth, environmental conditions have changed dramatically, and these changes are recorded in the minerals. Through this class we will explore how to identify minerals, the various ways in which minerals are formed, and how to interpret the history of the Earth by its minerals.

Here are the [Big Ideas](#) we're trying to get across in this class:

- The mineralogy of the Earth and terrestrial planets has evolved through dynamic processes
- Minerals reflect the environmental conditions in which they formed
- Minerals have variable chemistry
- Minerals have different crystal structures
- Minerals can be identified by their physical and chemical properties
- Minerals evolve through 3 primary mechanisms
 - progressive separation and concentration of elements
 - increasing range of intensive variables (P-T-X)
 - far-from equilibrium conditions

These are the [Learning Objectives](#) (skills and abilities) we want you to have when you come away from this class:

- Identify common minerals through physical observations of rock samples and thin sections
- Describe the structure and symmetry of the six crystal systems
- Describe the arrangement of silica polyhedral that form the basis of silicate classification
- Determine the silicate class based on mineral formula
- Describe how elements combine and arrange to form minerals
- Describe how mineral evolve through
 - progressive separation and concentration of elements
 - increasing range of intensive variables (P-T-X)
 - far-from equilibrium conditions
- Author a short scientific paper explaining and interpreting mineral analyses

Course Format

This course is presented in a studio format that combines lecture and lab into a single classroom session. In studio classrooms the amount of lecture material is reduced and more emphasis is placed on student-centered learning strategies that engage students in active learning, such as groups exercises, class discussion, and hands on projects.

Text

Nesse, William D. *Introduction to Mineralogy*, 2nd Edition.

Microscope Keys

Pay your microscope key deposit at https://commerce.cashnet.com/WWU_GeologyDept and pick up your keys from the front office.

Grading

Labs and Assignments

Laboratory work will account for 20% of the grade and assignments will account for 10% of the grade. The tentative lab and assignment schedule is available on Canvas and will be updated as the course progresses. Labs and assignments are due in class the week after they are started and are graded on accuracy and completeness. No late assignments will be accepted unless prior arrangements have been made.

Term Project

The term project will account for 15% of the grade. The details of the term project will be discussed in class and updated here

Exams

In-class quizzes will account for 10% of the grade. The midterm exam, lecture final, and lab final will each account for 15% of the grade. The midterm will have theoretical and lab practical components. The lecture final will be scheduled by the registrar and is a comprehensive, closed-book exam. The lab final will occur in the last week of class and is a practical, open-book exam that emphasizes mineral identification and techniques covered in lab.

Quiz and exam attendance is required. Missed quizzes and exams will receive a grade of 0. Quizzes may not be announced in advance and cannot be made up if missed. The lowest quiz score will be dropped. Make-up exams will not be given unless an acceptable medical excuse or a leave of absence from the Office of Student Life is presented.

Exam grades will be curved if necessary by normalizing the mean grade to 75%. If the mean grade is greater than 75% then that exam will not be curved.

Letter grades will be assigned by the scale below.

Score	92.5	90.0	87.5	82.5	80.0	77.5	72.5	70.0	67.5	62.5	60.0
Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-

Academic Integrity

All students are to uphold the [WWU Academic Honesty Policy and Procedures](#).

Academic integrity means challenging yourself, striving for excellence, taking risks and learning from your mistakes, doing your own work, and giving credit whenever you use the work of others. See me if you have any concerns or questions about academic integrity regarding yourself or your classmates.

Reasonable Accommodation

Reasonable accommodation for persons with documented disabilities should be established within the first week of class and arranged through Disability Resources for Students: phone 650-3083; email drs@wwu.edu; and on the web at [Disability Resources](#).

This syllabus is subject to change

Changes, if any, will be announced in class. Students are responsible for all changes.

Outcomes Assessment for Geology 306

(Mineralogy)

Course Outcomes	BA Geology	B.S. Geology	B.S. Geophysics
	1. Earth has a history of biological and physical change over billions of years.	1. Earth has a history of biological and physical change over billions of years.	1. Earth has a history of biological and physical change over billions of years.
	2. Earth's composition varies and these compositions provide the raw materials for the rock cycle.	2. Earth's composition varies and these compositions provide the raw materials for the rock cycle.	2. Earth's composition varies and these compositions provide the raw materials for the rock cycle.
	3. Earth scientists use repeatable observations and testable ideas to understand and explain our planet.	3. Earth scientists use repeatable observations and testable ideas to understand and explain our planet.	3. Earth scientists use repeatable observations and testable ideas to understand and explain our planet.
	7. developed their observational, analytical and quantitative skills	7. developed their observational, analytical and quantitative skills	7. developed their observational, analytical and quantitative skills
		9. Will be able to apply physics, chemistry, and mathematic concepts to the study of Earth	9. Will be able to apply physics, chemistry, and mathematic concepts to the study of Earth
		10. Will be able (alone or in teams) to present geological information clearly	10. Will be able (alone or in teams) to present geological information clearly