

Course Syllabus: Mineralogy

McCoy College of Science, Mathematics, and Engineering

GEOS 3134-101 | Fall 2023

Contact Information

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Pronouns: he/him

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Course Objectives

Mineralogy introduces students to the crystalline components found in rocks. Students successfully completing the course will be able to identify common minerals by their macro- and microscopic properties. Moreover, students completing the course will understand natural crystallization processes and products, their relationship to rock-forming processes, and how minerals record the environments of formation and alteration.

Textbook & Instructional Materials

Minerals: Their constitution and origin, 2ed. ISBN: 9781107514041

Key for Identification of Rock-Forming Minerals ISBN: 1138001147

Laboratory Manual for Mineralogy (distributed by D2L)

Room

Bolin 115 is both the meeting room and workroom for the course. Access by valid student ID card.

Student Handbook

Refer to: [Student Handbook](#)

Academic Misconduct Policy & Procedures

Academic Dishonesty: Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individual's to whom credit is given). Additional guidelines on procedures in these matters may be found in the Office of Student Conduct. The [Academic Honesty Checklist](#) describes the timeline for appealing from the instructor to the next in line (dean, for this class) and who must be notified of academic honesty infractions.

Artificial Intelligence

Chatbots (like ChatGPT) have recently grown in sophistication and accessibility. They can be useful tools to assist in drafting out responses, but they should be an assistance, not a substitute for your thinking.

Earth Science is a beautifully diverse field; you need to find your own voice. Any creative input in this class is an opportunity to test and refine that; avoid shortchanging yourself the feedback you deserve.

Finally, in all academic work, ideas and contributions from others must be acknowledged. Using an AI-content generator to complete coursework without proper attribution or authorization is a form of academic dishonesty. For this class, use of AI-content with appropriate citation is permitted.

Grading

Table 1: Assignment weights

Assignments	Percent
Research activity and report	12%
Field Trip 1	10%
Field Trip 2	5%
Exam 1	10%
Exam 2	13%
Lab quizzes	5%
Lab assignments	35%
Lab final exam	10%

Table 2: Total percentage points for final grade.

Grade	Points
A	90+
B	80 to 89.9
C	70 to 79.9
D	60 to 69.9
F	Less than 60

Work submission

Assignments may be remitted in class to the professor, in person or to mailboxes in Bolin 102. You may also scan and submit your work through 2DL. Select assignments will require submission only through D2L.

Note: You may not submit a paper for a grade in this class that already has been (or will be) submitted for a grade in another course, unless you obtain the explicit written permission of me and the other instructor involved in advance.

Exams

Exam 1 will be a 50-minute test covering the first half of the semester. Exam 2 will be a 2-hour comprehensive test, covering the entire semester. The lab final exam is 1 hour and 50 minutes and covers systematic mineral identification.

Projects Required

A term project will cover an individually-assigned topic approved by your instructor. The project will focus on characterizing a mineral using lab instrumentation.

Colloquium

The Kimbell School of Geosciences will host two to three speakers this semester. Your attendance at these events is a part of this class.

Late Work

Late submitted assignments are the bane of our mutual existence: they are disadvantageous to you, because you fall behind the class. They are detrimental to the class, because they hold up grading. They are inefficient to me, because they require my return of a previously graded assignment.

In an attempt to prevent tardy assignments, you will receive 10% points on the assignment for handing it in at the due time. Any late submission will not receive this 10%. You may continue to lose 10% for each week the assignment remains late. In effect, you lose a letter grade each week your assignment is late.

Needless to say, penalties will not be an issue if you complete your assignments well ahead of the due date.

Desire-to-Learn (D2L)

Extensive use of the MSU D2L program is a part of this course. Each student is expected to be familiar with this program as it provides a primary source of communication regarding assignments, examination materials, and general course information. You can log into [D2L](#) through the MSU Homepage. If you experience difficulties, please contact the technicians listed for the program or contact your instructor.

Attendance

Students are expected to attend all meetings of the classes in which they are enrolled. Students are graded on intellectual effort and performance rather than attendance, but absences or tardiness from lecture may result in a lower grade.

Note: you are still responsible for missed assignments and quizzes (most labs will include an assignment or quiz).

Furthermore

Mineralogy ranks is one of the most challenging classes within the undergraduate geoscience curriculum. It covers a number of abstract concepts. It incorporates attributes of inorganic chemistry, solid-state physics, and Euclidean geometry. It relies heavily on largely non-intuitive, frequently arcane, and always cumbersome nomenclature. In short, this important class is demanding by nature – dedicate yourself to daily progress and work with your professor to stay on track.

Change of Schedule

A student dropping a course (but not withdrawing from the University) within the first 12 class days of a regular semester or the first four class days of a summer semester is eligible for a 100% refund of applicable tuition and fees. Dates are published in the Schedule of Classes each semester.

Refund and Repayment Policy

A student who withdraws or is administratively withdrawn from Midwestern State University (MSU) may be eligible to receive a refund for all or a portion of the tuition, fees and room/board charges that were paid to MSU for the semester. HOWEVER, if the student received financial aid (federal/state/institutional grants, loans and/or scholarships), all or a portion of the refund may be returned to the financial aid programs. As described below, two formulas (federal and state) exists in determining the amount of the refund. (Examples of each refund calculation will be made available upon request).

Learning environment

Dr. Price is committed to providing an open forum for learning and endeavors to make this class a supportive and strengthening space for all students; he's keen to make this exciting content accessible and free of exclusion. He is available and willing to address you issues and concerns. He also wants you to be aware of the following supporting structures that assist in this environment.

MOSAIC Cross Cultural Center: a "support, resource, and advocacy center providing multicultural opportunities for the MSU Community that promotes self-awareness, identity, and culture" <https://msutexas.edu/student-life/mosaic/index.php>

Policies for general student complaints are available at <https://msutexas.edu/student-life/dean/general.php>. General student complaints should start with the informal process form https://cm.maxient.com/reportingform.php?MSUTexas&layout_id=4

Sexual misconduct is handled by the Title IX Coordinator, and misconduct information and reporting is <https://public.powerdms.com/MidwesternState/tree/documents/2221051>

Anonymous complaints can be made through EthicsPoint: <https://secure.ethicspoint.com/domain/media/en/gui/45483/index.html>

Services for Students with Disabilities

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through Disability Support Services, located in the Clark Student Center, Room 168, (940) 397-4140. Current documentation of a disability will be required in order to provide

appropriate services, and each request will be individually reviewed. For more details, please go to [Disability Support Services](#).

University-Wide Policies

Campus Carry

Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. The new Constitutional Carry law does not change this process. Concealed carry still requires a License to Carry permit, and openly carrying handguns is not allowed on college campuses. For more information, visit [Campus Carry](#).

Active Shooter

The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. Please review the information provided by MSU Police Department regarding the options and strategies we can all use to stay safe during difficult situations. For more information, visit [Safety / Emergency Procedures](#).

Grade Appeal Process

Update as needed. Students who wish to appeal a grade should consult the Midwestern State University [Undergraduate Catalog](#). The [Grade Appeal Checklist](#) provides the timeline for appealing from the instructor to the next in line (dean of the college).

Illness

Covid-19 and the emergence of new strains remains a concern. The instructor would appreciate your thoughtful engagement of the class, including respecting the health, safety, and concerns of your colleagues. As always – illness is an excused absence.

Notice

Changes in the course syllabus, procedure, assignments, and schedule may be made at the discretion of the instructor.

Course Schedule

MSUTexas - Mineralogy - GEOS 3134				Fall 2022
D	Date	Lecture subject	Wenk and Bulakh	Lab topic
M	8/28	Introduction to class	None	
W	8/30	Introduction to minerals and the planet	Chapter 1	The one about symmetry
F	9/1	Mohs exploration	Chapter 1	
W	9/6	Atoms - light and energy	Chapter 2	No lab
F	9/8	Atoms - electron structure	Chapter 2	
M	9/11	Bonding Atoms - ionization and covalence	Chapter 2	The one on lattices
W	9/13	Pauling's Rules	Chapter 2	
F	9/15	Lattices, packing, and symmetry	Chapter 7	
M	9/18	Isomorphism, solid solutions, and polymorphism	Chapter 3	The one about 3D representations
W	9/20	Crystal growth	Chapter 10	
F	9/22	Crystal growth - twinning, defects,	Chapter 9	
M	9/25	Optical Mineralogy	Chapters 13	The one about analytical techniques
W	9/27	Optical Microanalysis	Chapters 14	
F	9/29	Crystal diffraction	Chapter 11	
M	10/2	Element fluorescence	Chapter 16	The one about mineral properties
W	10/4	Mineral environments	Chapter 18	
F	10/6	Phases and stability	Chapter 19	
M	10/9	More stability	Chapter 20	The one about microscopes
W	10/11	Chemical transfer	Chapter 20	
F	10/13	Chemical transfer	Chapter 20	
M	10/16	Review video	Online	The other one about microscopes
W	10/18	Exam 1	See above	
F	10/20	Framework silicates	Chapter 21	

D	Date	Lecture subject	Wenk and Bulakh	Lab topic
M	10/23	Framework silicates	Chapter 21	
W	10/25	Framework silicates	Chapter 21	The one about silicates
F	10/27	Native elements and primitives	Chapter 22	
M	10/30	Halides	Chapter 23	
W	11/1	Carbonates	Chapter 24	The other one about silicates
F	11/3	Carbonates	Chapter 24	
M	11/6	Sulfates & phosphates	Chapter 25	
W	11/8	Sulfates & phosphates	Chapter 25	The third one on silicates
F	11/10	Sulfides	Chapter 26	
M	11/6	Oxides and hydroxides	Chapter 27	
W	11/8	Ortho and ring silicates	Chapter 28	The one on ore minerals
F	11/10	No lecture - Field trip departure late afternoon	Chapter 29	
S	11/11	<i>Field Trip: Wichita Mountains</i>		
Sn	11/12	<i>Field Trip: Wichita Mountains</i>		
M	11/13	Sheet silicates - micas	Chapter 29	
W	11/15	Sheet silicates - clays	Chapter 30	The one about carbon- and sulf- ates
F	11/17	Chain silicates - single chains	Chapter 30	
S	11/18	<i>Field Trip: Dallas Gem and Mineral Show</i>		
M	11/21	Gemstones	Chapter 34	The one about the rest of the categories
M	11/29	Chain silicates - single double chains	-	
W	11/31	Sustainability and minerals	-	Lab final
F	12/1	Sustainability and minerals	-	
M	12/4	Exam 2		