Kimbell School of Geosciences

Course Syllabus: Mineralogy

McCoy College of Science, Mathematics, and Engineering

GEOS 3134-101 | Fall 2025

Contact Information

Instructor: Dr. Jonathan D. Price (he/him)
Office: Bolin 101B
Office hours: M 1-2 PM | T 10:30AM -12PM | W 1-2PM | R: 3:30-5:30PM | by appointment
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Teaching Assistant

Ms. Jordan Swearingen, M.S. student, will serve as a teaching assistant for the class.

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)
Mindat.org

Room

Bolin 117 is both the meeting room and workroom for the course.

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Dishonesty: Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individual's to whom credit is given).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 thought.
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
Project	12%
Field Trip 1	10%
Field Trip 2	5%
Exam 1	10%
Exam 2	13%
Quizzes	5%
Lab assessments	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 on Pierce 207. 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.

Field Trips
The class offers two field trips with assignments. Both are optional in that if you cannot attend, you can complete an alternative assignment.

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 result 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 environment 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, performance, and engagement rather than attendance, but absences or tardiness from lecture tend to affect these.
Note: you are still responsible for missed assignments and quizzes (most labs will include an assignment and/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 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.

But…

Although I expect a high-level of engagement from students, I am fully aware that this class presents serious challenges. Most is novel material that you've never encountered. Few students master all components of the class. Full understanding of the topic is honestly beyond the average undergraduate (most of us require more exposure past the semester). As such, it has a high potential to make students feel lost, frustrated, insecure, behind, and incapable. These are natural and normal feelings.

DON'T GIVE UP!

Please talk to me about your concerns should you feel overwhelmed. We can chart a way forward.

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 a forum for learning and endeavors. This class will be a safe, open, and supporting space for all students. Dr. Price is available and willing to address your issues and concerns. He also wants you to be aware of the following supporting structures that assist in this environment.

Student Engagement Center: cultivates "a sense of belonging for all students at MSU Texas by facilitating student access to critical resources and opportunities, supporting student success and advocating for constant improvement in the way we meet students' needs across our campus." https://msutexas.edu/student-life/engagement-center/

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://msutexas.edu/titleix/

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

Tobacco Policy

College policy strictly prohibits the use of tobacco products in any building owned or operated by MSU.

Alcohol and Drug Policy

To comply with the Drug-Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State are informed that strictly enforced policies are in place which prohibit the unlawful possession, use, or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state, and federal law for any offenses involving illicit drugs on University property or at University-sponsored activities.

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 the MSU Police Department regarding the options and strategies we can all use to stay safe during difficult situations. For more information, visit MSUReady – Active Shooter.

Notice

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

Course Schedule

Day	Date	Set	Topic	Wenk & Bulahk	Lab	Q&E
M	25-Aug	1	Introduction to class	None	NA	None
W	27-Aug	L1	Symmetry	Chapter 8	The one about symmetry	None
F	29-Aug	2	Introduction to minerals and the planet	Chapter 1	NA	None
W	3-Sep	L2	Lattice attributes	Chapter 7	The one about symmetry - cont	None
F	5-Sep	3	Atoms	Chapter 2	NA	Quiz 1
M	8-Sep	4	Quantum Mechanics	Chapter 2	NA	None
W	10-Sep	L3	Projections	Chapter 8	The one about 3D representations	None
F	12-Sep	NA	Lab review	NA	NA	None
M	15-Sep	5	Ions and Periods	Chapter 2	NA	None
W	17-Sep	L4A	Crystal diffraction	Chapter 11	The one on lattices	None
F	19-Sep	L4B	Element fluorescence	Chapter 16	NA	Quiz 2
M	22-Sep	6	Chemical Bonding	Chapter 7	NA	None
W	24-Sep	NA	Catch-up	NA	The one about analytical techniques	None
F	26-Sep	7	Packing & Coordination	Chapter 2	NA	None
M	29-Sep	8	Pauling's Rules - ionic potential	Chapter 2	NA	None
W	1-Oct	9	Isomorphism, solid solutions, and polymorphism	Chapter 3	The one about mineral properties	None
F	3-Oct	L5A	Optical Mineralogy	Chapters 13	NA	Quiz 3
M	6-Oct	L5B	Optical Microanalysis	Chapters 14	NA	None
W	8-Oct	10	Growth- nucleation and defects	Chapter 10	The one about microscopes	None
F	10-Oct	11	Growth-twins-polymorphs	Chapter 9	NA	Exam 1
M	13-Oct	12	Growth-zoning & polycrystals	Chapter 18	NA	None
W	15-Oct	13	Phases and stability	Chapter 19	The one about silicates	None
F	17-Oct	13	Diagrammatic thermodynamics	Chapter 20	NA	None
M	20-Oct	14	Chemical transfer	Chapter 20	NA	None
W	22-Oct	14	Chemical transfer	Chapter 20	The other one about microscopes	None
F	24-Oct	15	Framework silicates	Chapter 21	NA	Quiz 4
M	27-Oct	16	Framework silicates	Chapter 21	NA	None
W	29-Oct	17	Native elements and primitives	Chapter 22	The other one about silicates	None

Day	Date	Set	Topic	Wenk & Bulahk	Lab	Q&E
F	31-Oct	18	Halides and salts	Chapter 23	NA	None
FT	31-Oct	WS	Field Trip: Wichita Mountains	NA	NA	None
M	3-Nov	19	Carbonates	Chapter 24	NA	None
W	5-Nov	20	Carbonates	Chapter 24	The third one on silicates	None
F	7-Nov	21	Sulfates & phosphates	Chapter 25	NA	Quiz 5
M	10-Nov	22	Sulfides	Chapter 26	NA	None
W	12-Nov	23	Oxides and hydroxides	Chapter 27	The one on ore minerals	None
F	14-Nov	24	Ortho and ring silicates	Chapter 28	NA	None
M	17-Nov	25	Sheet silicates - micas	Chapter 29	NA	None
W	19-Nov	26	Chain silicates - single chains	Chapter 30	The one about carbon- and sulfates	None
F	21-Nov	27	Chain silicates - double chains	Chapter 30	NA	Quiz 6
S	22-Nov	WS	Field Trip: Dallas Gem and Mineral Show	NA	NA	None
M	24-Nov	GS	Gemstones	Chapter 34	The one about the rest of classes	None
M	1-Dec	28	Geotime	NA	NA	None
W	3-Dec	29	Sustainability and minerals	NA	Lab final	None