



Course Syllabus: Physical Geology
McCoy College of Science, Mathematics, and Engineering
GEOS 1134-101
Fall 2024

Contact Information

Instructor: Dr. Andrew Katumwehe

Office: Pierce 206

Lecture: MWF 10:00–10:50 am RM Dillard 101

Lab GEOS1134-11A: M 1:00–2:50 pm RM 117

Lab GEOS1134-11B: W 1:00–2:50 pm RM 115

Lab GEOS1134-11C: T 1:30–3:20 pm RM 117

Office hours: T, R : 10:00 – 11:00 am and, F 1–4 pm

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Course Description

This course is a lecture-based overview of the Earth, its mineral and rock components, and the variety of surface and subsurface physical processes that have operated over Earth's long history. Lectures are limited and cover only the most essential aspects of the 24 topics that comprise this course. However, this gives you the basic knowledge if they are complemented with more reading. These topics cover various components of the Earth, including minerals, igneous rocks, sedimentary rocks, and metamorphic rocks and their associated mineral and energy deposits. We will also look at the various surface processes that largely shape the Earth's surface, such as weathering, erosion, and mass movement due to water, wind, and gravity. We will examine the subsurface processes that affect us, such as earthquakes and volcanic activity, and their associated hazards. The theory of plate tectonics that was put forward as a hypothesis in the early 1900s and became widely accepted about 50 years ago will be examined. In addition to the PowerPoint-based lectures, you must read the appropriate chapters in the mandatory course textbook.

The Lab course includes hands-on projects ranging from mineral and rock identification to using and understanding maps to studying key surface processes such as mass wasting (landslides and rock falls), the impact of water as an agent of weathering and transport medium, and the impact of geological processes such as earthquakes and volcanoes. You will need the required Lab Manual in your lab section meetings.

By the end of this course, you will understand the Earth's surface and subsurface structure well. You will also learn the pivotal role of plate tectonics in geology, which explains the occurrence and distribution of oceans, mountains, earthquakes, volcanoes, and large geologically passive regions such as the eastern portion of the United States. Additionally, you will comprehend how rivers, winds, oceans, and gravity continually shape the Earth's surface.

Required Textbook & Instructional Materials

Earth: An Introduction to Physical Geology (Tarbuck, 12th Edition)

Laboratory Manual in Physical Geology (Cronin and Tasa, 11th Edition)

Student Handbook

Refer to: [Student Handbook 2021-2022](#)

Academic Misconduct Policy & Procedures

Academic Dishonesty: MSU is committed to maintaining the highest standards of integrity and ethical conduct. This level of ethical behavior and integrity will be maintained in this course. Participating in behavior that violates academic integrity (e.g., unauthorized collaboration, plagiarism, multiple submissions, cheating on examinations, helping another person cheat, unauthorized access to tests, altering or destroying the work of others, and altering academic records) will result in an official academic sanction. Violations may subject you to disciplinary action, including the following: receiving a failing grade on an assignment, examination, or course, receiving a notation of a violation of academic integrity on your transcript, and being suspended from the University. Violations may subject you to disciplinary action, including the following: receiving a failing grade (0%) on an assignment, examination, or course, receiving a notation of a violation of academic integrity on your transcript, and being suspended from the University. Violations of academic integrity will be reported for administrative action, and the penalties for such infractions will be as listed in the [MSU policy on Academic Integrity](#).

Artificial Intelligence (AI).

Chat GPT and University Policy: AI programs assist writers. AI programs do not replace human creativity, originality, and critical thinking. Writing is a craft you must develop over time to develop your writing voice. This course assumes that the students will write all work submitted by students. All coursework without proper citation or attribution is a form of academic dishonesty. AI writing detection complements Turnitin's similarity-checking workflow and is integrated with D2L. The detection component provides a percentage score for AI-written text.

Grading

Lecture Portion of course = 55% of final grade. Exam 1 = 10% of the final grade; Lecture Exam 2 = 15% of the final grade; Final Exam = 20% of the final grade; lecture quizzes 10%. Lab Portion of course = 40% of final grade. Lab Quizzes 1 and 2 (Rock and Mineral Identification) determine 5% of your final course grade. The lab Comprehensive Final Quiz is worth 10% of the final course grade (there

will be rocks and minerals to identify on the lab final). Lab attendance and participation, lab exercise completion, and homework assignments (usually one per week) determine your overall lab completion grade, worth 20% of your final course grade. All lab assignments must be turned in within one week of the original due date. Late submissions will receive a grade penalty of generally one letter grade per week. After two weeks, a grade of zero will be given for a late assignment. Exams and Lab quizzes may be made up only if (1) you have a written excuse for why you missed the exam and (2) you notified Dr. Katumwehe and the lab TA that you would miss the exam. A missed exam or quiz must be made up within one week, or you receive a grade of zero. However, there may be extreme circumstances as to why prior notice was not given. These will be evaluated on a case-by-case basis. Note that oversleeping is not an acceptable reason! The final lab exam will be cumulative and include material from previous lab assignments and exercises. All components of your final grade must be completed by Dec 06, 2024. The homework assignments will be posted on D2L. Homework due dates are listed in the syllabus. No homework lab assignments may be submitted after this date. The Table below (next page) summarizes the grading policy for this course.

Table 1: Grade points as discussed in the grading section above.

Graded Items	Contribution to Final Course Grade
Exam 1	10%
Exam 2	15%
Final Exam 3	20%
Lecture Quizzes	15%
Lab Overall Grade (includes lab quizzes, lab participation and attendance, homework assignments, and assessments)	40% (Labs for mineral and rock; each quiz is 5% of the final course grade Lab final is 10% of the final course grade). The lab participation grade is 20% of the final course grade derived from lab assignments, lab participation and attendance, and homework submittals.

Table 2: Final grades are typically rounded to the nearest integer before assigning the final course letter grade. For example, a final calculated course grade of 89.8% will be rounded to a final grade of 90%.

Grade	Points
A	90 and above
B	80-89
C	70-79
D	60-69
F	Less than 60

Homework

See the Grading Section for details – All Homework will be submitted to your lab TA in your regular lab section.

Lab Assignments

See the Grading Section for details – All Lab Assignments must be submitted to your lab TA during your regular lab section meeting.

Lab Attendance Policy – Important!

Students who **miss three** or more lab section meetings may be dropped from the course by the instructor. Students are responsible for working with their lab section TA to make up any missed material promptly. Students must email their lab TA and Dr. Katumwehe in advance to avoid missing a lab section. Students **who leave lab sections and class early may be marked absent**. However, any proximal interaction, including supervision or collegial interaction in the class, lab, and outside during demonstration, requires individual protection.

Exams

See Grading Section for details – Three lecture exams are included in your course grade; see Grades section for more information. All exams will be scheduled to be online or face-to-face and have a time limit of 50 minutes for the two "midterm" exams and 110 minutes for the final exam.

Lecture (Attendance) Extra Credit

Expect minimum extra credit opportunities irregularly and randomly, especially during lectures. Each extra credit opportunity will be worth up to one (1.0) extra credit point. Generally, these opportunities will involve a short written response to a question or problem posed during the lecture or, more often than not, in-class quizzes. (bring a paper and pen/pencil to lectures!). We have more than 5 extra credit opportunities during the semester. Note that the final curve will be based on class attendance, participation, submission of all the assignments, lab work, and final research paper.

Special Extra Credit

No unique extra credit opportunities; however, extra quizzes, attendance, and spot assessments are the way to make extra points.

Late Work

Late work will be accepted through 12/06/2024; please refer to the conditions above. However, the following penalties will apply in all cases of late submittals: 10% for one day past due, 20% for two days past due, and 30% for three days past due; after three days, a grade of F will be recorded.

Important Dates on the Spring 2024 schedule of classes.

The last day to drop this course with a grade of "W" is 4 pm, November 25, 2024. Drops after this date will receive grades of "F." Refer to academic calendar: [Drops, Withdrawals & Void](#). More information can be found [here](#).

Desire-to-Learn (D2L)

The MSU D2L program is part of this course. Lectures, review materials, and course information will be available through D2L. 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.

Online Exam Requirements

Taking a course with considerable online classes requires access to a computer with reasonable Internet access to complete and upload your assignments. You are responsible for having (or having access to) a working computer in this class. Assignments and tests are due by the due date, and personal computer technical difficulties may not be considered a reason for the instructor to allow students extra time to submit assignments, tests, or online exams. Computers are available on campus in various areas of the buildings and the Academic Success Center. Your computer being down is not an excuse for missing a deadline or an exam! Contact your instructor immediately upon having personal computer trouble. A student helpdesk is available if you have technical difficulties in the course. The college cannot work directly on student computers due to liability and resource limitations; however, they can help you connect to our online services. For help, log into [D2L](#).

Refund and Repayment Policy

A student who withdraws or is administratively withdrawn from MSU may be eligible to receive a refund for all or a portion of the tuition, fees, and room/board charges paid to MSU for the semester. However, the refund may be returned to the financial aid programs if the student received financial aid (federal/state/institutional grants, loans, and/or scholarships).

Services for Students with Disabilities

Per Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990, MSU makes 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 apply for such assistance through Disability Support Services, located in the Clark Student Center, room 168. Documentation of a disability will be required to provide appropriate services, and each request will be individually reviewed. For more details, please go to [Disability Support Services](#).

Campus Carry and Active Shooter 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 are the responsibility of everyone in our community. Each of us must 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 [Safety / Emergency Procedures](#). Students are encouraged to watch the "Run. Hide. Fight" video, which may be electronically accessed via the University police department's webpage: ["Run. Hide. Fight."](#)

Smoking/Tobacco Policy

College policy strictly prohibits the use of tobacco products in any building. Adult students may smoke outside and only in designated smoking areas at each location.

Alcohol and Drug Policy

Under the Drug-Free Schools and Communities Act of 1989 and subsequent amendments, all MSU students and employees are advised that strict policies are enforced to prohibit the illegal 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.

Grade Appeal Process

Students wishing to appeal a grade should consult the Midwestern State University MSU policy on the Academic [Integrity](#) and grade [appeal checklist](#).

Notice

Any course syllabus, procedure, assignments, and schedule changes may be made at the instructor's discretion. However, these changes will be communicated to all students through [D2L](#) and your school email. Please be on the lookout for course news and schedule updates regularly.

Course schedule details are given on the following five pages. The first Table lists lecture topics, textbook readings, and the three lecture exams. The second Table lists the dates for the lab topics, three lab quizzes, homework assignment due dates, and self-assessment assignments.

Course Schedule – Lecture Topics and Exams, Text Reading (Page 1 of 3)

Date	Topic and Topic Number	Textbook Pages
26- Aug	Course Overview. What is Science? What is the Scientific Method? Geology as a Science. Why Study Geology?	Pages 2-13
28- Aug	Earth Systems	Pages 13-17
30- Aug	Internal Structure of the Earth Assignment 1	Pages 19-35
02-Sept	Labor Day	No Classes
04-Sept	Plate Tectonics - Part 1	Pages 36-71
06-Sept	Plate Tectonics - Part 2 Assignment 2	Pages 36-71
09-Sept	Mineral and matter - Part 1. Basic Concepts	Pages 72-105
11-Sept	Mineralogy - Part 2. Important Mineral Classes Assignment 3	Pages 72-105
13-Sept	Igneous Rocks and Minerals - Part 1.	Pages 106-139
16-Sept	Igneous Rocks and Minerals - Part 2. Magma and Intrusive Igneous Activity	Pages 106-139
18-Sept	Igneous Rocks and Minerals - Part 3. Magma and Intrusive Igneous Activity	Pages 106-139
20-Sept	Igneous Rocks and Minerals - Part 3. Volcanoes and Associated Hazards Assignment 4	Pages 140-179
23- Sept	Weathering and Soil Formation	Pages 180-209
25- Sept	Sedimentary Rocks - Part 1.	Pages 210-239
27- Sept	Sedimentary Rocks - Part 2.	Pages 210-239
30- Sept	Sedimentary Rocks - Part 3. Sedimentary Textures and Depositional Environments Assignment 5	Pages 210-239
02- Oct	Energy and Mineral Resources. Diagenesis and Lithification; Economic Geology of Sedimentary Rocks excluding Oil and Gas	Pages 210-239

Course Schedule – Lecture Topics and Exams, Text Reading (Page 3 of 3)

Date	Topic and Topic Number	Textbook Pages
04- Oct	Review 1	N/A
07- Oct	FIRST EXAM -10% of the grade	
09- Oct	Sedimentary Rocks - Part 5. Geology of Oil and Natural Gas	Pages 210-239
11- Oct	Metamorphic Rocks - Part 1. Metamorphism, Metamorphic Textures, Common Metamorphic Rocks	Pages 240-271
14- Oct	Metamorphic Rocks - Part 2. Burial/Regional Metamorphism	Pages 240-271
16- Oct	Metamorphic Rocks - Part 3. Contact and Hydrothermal Metamorphism; Economic Geology of Metamorphic Rocks Assignment 7	Pages 240-271
18- Oct	Time and Geology. Relative time and absolute time scale	Pages 272-281
21- Oct	Time and Geology. Relative time and absolute time scale	Pages 272-281
23- Oct	Crustal Processes - Earthquakes	Pages 326-361
25- Oct	SECOND EXAM - 20% of grade	
28- Oct	Crustal Processes - Oceans	Pages 386-417
30- Oct	Crustal Processes - Mountains	Pages 418-441
01- Nov	Crustal Processes - Mass Wasting	Pages 442-465
04- Nov	Crustal Processes - Mass Wasting Assignment 8	Pages 442-465
06- Nov	Crustal Processes - Surface and Running Water Assignment 9	Pages 466-499
08- Nov	Crustal Processes - Ground Water	Pages 500-531
11- Nov	Crustal Processes - Ground Water Assignment 10	Pages 500-531
13- Nov	Crustal Processes - Glaciers	Pages 532-569
15- Nov	Crustal Processes - Part 7. Winds and Deserts Assignment 11	Pages 570-593
18- Nov	Crustal Processes - Part 8. Oceans and Shorelines	Pages 594-629
20- Nov	Climate Change – Part II Assignment 12	Pages 630-665

Date	Topic and Topic Number	Textbook Pages
22- Nov	Course and Final Exam Review	Last Day to Submit Any Late Assignments! Grade Penalties per the Course Syllabus May Apply. Nothing is accepted after 11 pm CDT.
Nov 26-Dec 01	Holiday Break	No Class
13 Dec -10:30 - 12:30 am	THIRD EXAM (will cover all material presented in the lecture and the lab section of the course) - 20% of grade. Room and time per University Final Exam Schedule.	

Course Schedule –for Labs, Lab Quizzes, Homework, Research Paper, and Assessments (Page 1 of 2).

Date (Week of date listed unless otherwise noted as a specific date)	Lab Topic, Lab Quiz , Research Paper	Homework and Self-Assessment Assignments
04, 05-Sept	Lab #1 - Mineral Identification – Lab Book Section 3	
09, 11, 12- Sept	Lab #2 Mineral Identification – Lab Book Section 3.	HW 1 and Assessment 1
16, 18, 19-Sept	Lab #3 Mineral Identification – Lab Book Section 3	HW 2 and Assessment 2
23, 25, 26-Sept	Lab Mineral Quiz - 5% of grade. Also, Lab #4 Introduction to Rocks - Lab Book Section 4	HW 3 and Assessment 3
30-Sept, 02, 03-Oct	Lab #5 Igneous Rocks - Lab Book Section 5	HW 4 and Assessment 4
07, 09, 10- Oct	Lab #6 Sedimentary Rocks – Lab Book Section 6	HW 5 and Assessment 5
14, 16, 17-Oct	Lab #7 Metamorphic Rocks – Lab Book Section 7	HW 6 and Assessment 6
21, 23, 24-Oct	Lab Rock and Mineral Quiz - 5% of grade; Also, Lab #8 Dating of Rocks, Fossils, and Geological Events – Lab Book Section 8	HW 7 and Assessment 7
28, 30, 31- Oct	Lab #9 - Topographic Maps and Earthquakes	HW 8 and Assessment 8
04, 06, 10-Nov	Lab #10 - Geological Structures, Block Diagrams, and Maps	HW 9 and Assessment 9
11, 13, 14-Nov	Lab #11 River Processes and Hazards – Lab Book Section 11	HW 10 and Assessment 10
18, 20, 21-Nov	#12 Groundwater and Glaciers - Lab Book Sections 12 and 13	HW 11 and Assessment 11
25-Nov, 04, 06 -Dec	#12 Groundwater and Glaciers - Lab Book Sections 12 and 13	HW 11 and Assessment 11

Course Schedule –for Labs, Lab Quizzes, Homework, Research Paper, and Assessments (Page 2 of 2)

Date (Week of date listed unless otherwise noted as a specific date)	Lab Topic, Lab Quiz, Research Paper	Homework and Self-Assessment Assignments
09, 11, 13 -Dec	LAB FINAL QUIZ (includes Rocks and Minerals) - 10% of grade	None
06- Dec		Last Day to Submit Any Late Assignments! Grade Penalties per the Course Syllabus May Apply

End of the course syllabus