



**Course Syllabus: Physical Geology**  
**McCoy College of Science, Mathematics, and Engineering**  
**GEOS 1134-102**  
**Spring 2023**

**Contact Information**

Instructor: Dr. Andrew Katumwehe

Office: Pierce 206

Lecture: MWF 11:00–11:50 am RM Dillard 129

Lab GEOS1134-21A: M 1:00–2:50 pm RM 117

Lab GEOS1134-21B: W 1:00–2:50 pm RM 115

Lab GEOS1134-21C: R 1:00–2:50 pm RM 115

Office hours: T,R: 10:00 – 11:00 am and, F 1–3 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](#).

### **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 May 04, 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.**

<b>Graded Items</b>	<b>Contribution to Final Course Grade</b>
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; <b>each</b> 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 individual 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, lecture quizzes. (Therefore, bring paper and pen/pencil to lectures!). There will be more than 18 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 05/04/2024; 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 4pm, March 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. If you have technical difficulties in the course, a student helpdesk is available to you. 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 Midwestern State University (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, if the student received financial aid (federal/state/institutional grants, loans, and/or scholarships), the refund may be returned to the financial aid programs.

### **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**

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.

### **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, research paper due dates, homework assignment due dates, and self-assessment assignments.

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

<b>Date</b>	<b>Topic and Topic Number</b>	<b>Textbook Pages</b>
<b>15-Jan</b>	<b>Martin Luther Day</b>	<b>No class</b>
17- Jan	Course Overview. What is Science? What is the Scientific Method? Geology as a Science. Why Study Geology?	Pages 2-13
19- Jan	Earth Systems	Pages 13-17
22- Jan	Internal Structure of the Earth <b>Assignment 1</b>	Pages 19-35
24- Jan	Plate Tectonics - Part 1	Pages 36-71
26- Jan	Plate Tectonics - Part 2 Assignment 2	Pages 36-71
29- Jan	Mineral and matter - Part 1. Basic Concepts	Pages 72-105
31- Jan	Mineralogy - Part 2. Important Mineral Classes <b>Assignment 3</b>	Pages 72-105
02- Feb	Igneous Rocks and Minerals - Part 1.	Pages 106-139
05- Feb	Igneous Rocks and Minerals - Part 2. Magma and Intrusive Igneous Activity	Pages 106-139
07- Feb	Igneous Rocks and Minerals - Part 3. Magma and Intrusive Igneous Activity	Pages 106-139
09- Feb	Igneous Rocks and Minerals - Part 3. Volcanoes and Associated Hazards <b>Assignment 4</b>	Pages 140-179
12- Feb	Weathering and Soil Formation	Pages 180-209
14- Feb	Sedimentary Rocks - Part 1.	Pages 210-239
16- Feb	Sedimentary Rocks - Part 2.	Pages 210-239
19- Feb	Sedimentary Rocks - Part 3. Sedimentary Textures and Depositional Environments <b>Assignment 5</b>	Pages 210-239
21- Feb	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
23- Feb	<b>Review 1</b>	
26- Feb	<b>FIRST EXAM</b> (will cover all material through February 18) - 10% of grade	N/A
28- Feb	Sedimentary Rocks - Part 5. Geology of Oil and Natural Gas <b>Assignment 6</b>	N/A
01- March	Metamorphic Rocks - Part 1. Metamorphism, Metamorphic Textures, Common Metamorphic Rocks	Pages 240-271
04- March	Metamorphic Rocks - Part 2. Burial/Regional Metamorphism	Pages 240-271
06- March	Metamorphic Rocks - Part 3. Contact and Hydrothermal Metamorphism; Economic Geology of Metamorphic Rocks <b>Assignment 7</b>	Pages 240-271
8- March	Time and Geology. Relative time and absolute time scale	Pages 272-281
<b>March 11-15</b>	<b>Spring Break</b>	<b>No Class</b>
18- March	Crustal Processes - Surface Geological Observations; Deformation - Folds and Fractures	Pages 302-325
20- March	Crustal Processes - Earthquakes	Pages 326-361
22- March	<b>SECOND EXAM</b> (will cover all material presented or assigned through March 12) - 20% of grade	
25- March	Crustal Processes - Oceans	Pages 386-417
27- March	Crustal Processes - Mountains	Pages 418-441
<b>March 28-29</b>	<b>Holiday Break</b>	<b>No Class</b>
01- April	Crustal Processes - Mass Wasting	Pages 442-465
03- April	Crustal Processes - Mass Wasting <b>Assignment 8</b>	Pages 442-465
5- April	Crustal Processes - Surface and Running Water <b>Assignment 9</b>	Pages 466-499

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

Date	Topic and Topic Number	Textbook Pages
8- April	Crustal Processes - Ground Water	Pages 500-531
10- April	Crustal Processes - Ground Water <b>Assignment 10</b>	Pages 500-531
12- April	Crustal Processes - Glaciers	Pages 532-569
15- April	Crustal Processes - Part 7. Winds and Deserts <b>Assignment 11</b>	Pages 570-593
17- April	Crustal Processes - Part 8. Oceans and Shorelines	Pages 594-629
19- April	Climate Change – Part II <b>Assignment 12</b>	Pages 630-665
22- April	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.
May 06-10:30 -12:30 am	<b>THIRD EXAM</b> (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, <b>Lab Quiz, Research Paper</b>	Homework and Self-Assessment Assignments
22, 24, 25-Jan	Lab #1 - Mineral Identification – Lab Book Section 3	
29, 31-Jan 1-Feb	Lab #2 Mineral Identification – Lab Book Section 3.	HW 1 and Assessment 1
05, 7, 8-Feb	Lab #3 Mineral Identification – Lab Book Section 3	HW 2 and Assessment 2
12, 14, 15-Feb	<b>Lab Mineral Quiz - 5% of grade.</b> Also, Lab #4 Introduction to Rocks - Lab Book Section 4	HW 3 and Assessment 3
19, 21, 22-Feb	Lab #5 Igneous Rocks - Lab Book Section 5	HW 4 and Assessment 4
26, 28, 29- Feb	Lab #6 Sedimentary Rocks – Lab Book Section 6	HW 5 and Assessment 5
4, 6, 7-Mar	Lab #7 Metamorphic Rocks – Lab Book Section 7	HW 6 and Assessment 6
18, 20, 21-Mar	<b>Lab Rock and Mineral Quiz - 5% of grade;</b> Also, Lab #8 Dating of Rocks, Fossils, and Geological Events – Lab Book Section 8	HW 7 and Assessment 7
March 25, April 1, 3	Lab #9 - Topographic Maps and Earthquakes	HW 8 and Assessment 8
4, 8, 10-Apr	Lab #10 - Geological Structures, Block Diagrams, and Maps	HW 9 and Assessment 9
11, 15, 17-Apr	Lab #11 River Processes and Hazards – Lab Book Section 11	HW 10 and Assessment 10
18, 22, 24-Apr	#12 Groundwater and Glaciers - Lab Book Sections 12 and 13	HW 11 and Assessment 11
25, 26, 29-Apr	#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, <b>Lab Quiz, Research Paper</b>	Homework and Self-Assessment Assignments
01, 04, 06 -May	<b>LAB FINAL QUIZ (includes Rocks and Minerals) - 10% of grade</b>	None
04- May		Last Day to Submit Any Late Assignments! Grade Penalties per the Course Syllabus May Apply

End of the course syllabus