



**Course Syllabus: Physical Geology**  
**McCoy College of Science, Mathematics, and Engineering**  
**GEOS 1134-101**  
**Fall 2023**

**Contact Information**

Instructor: Dr. Andrew Katumwehe  
Office: Bolin 102A Moving to Pierce Hall 2nd Floor  
Lecture GEOS 1134-101: MWF 10:00–10:50 am RM 127  
Lab GEOS1134-21A: M 1:00–2:50 pm RM 117  
Lab GEOS1134-21B: T 1:00–2:50 pm RM 115  
Lab GEOS1134-21C: R 1:00–2:50 pm RM 117  
Lab GEOS1134-21D: R 3:00–4:50 pm RM 115 Majors  
Office hours: W: 1:00 – 4:00 pm, 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 basic knowledge if 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 broadly 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. We will discuss the theory of plate tectonics put forward as a hypothesis in the early 1900s that became widely accepted about 50 years ago. 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 be familiar with the structure of the Earth, surface, and subsurface, the importance of plate tectonics as a unifying theme for geology and as an explanation for the occurrence and distribution of oceans, mountains, earthquakes, volcanoes, and large geologically passive regions such as the eastern portion of the United States. You will also understand the role of rivers, winds, oceans, and gravity continuously shaping 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 2022-2023](#)

### **Academic Misconduct Policy & Procedures**

**Academic Dishonesty:** MSU is committed to maintaining the highest standards of integrity and ethical conduct. This course will uphold this standard of ethical conduct and integrity. Participating in behavior that violates academic integrity (e.g., unauthorized collaboration, plagiarism, multiple submissions, cheating on examinations, helping another person cheat, unauthorized advance 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. Academic integrity violations and penalties for such infractions are listed in the [MSU policy on Academic Integrity](#).

### **Chat GPT and University Policy**

We recognize that a variety of AI programs are available to 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 all work submitted by students will be written by the students themselves, working individually or in groups. Students should not have another person/entity writes any substantive portion of an assignment for them, which includes hiring a person or a company to write assignments and using artificial intelligence tools like ChatGPT. All coursework without proper citation or attribution is a form of academic dishonesty.

### **Turnitin**

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. However, the AI score will include all text consistency, including Grammarly, spell-check, predictive text, etc., and is not limited to ChatGPT.

### **Grading**

Lecture Portion of the course = 55% of the 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 the 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 due date. Late submissions will receive a grade penalty of generally one letter grade per week. A grade of zero will be given for a late assignment after one week. Exams and Lab quizzes may be made up only if (1) you have a written excuse as to why you missed the exam and (2) you notified Dr. Katumwehe and the lab TA in advance that you would miss the exam. A missed exam or quiz must be made up within one week, or you will 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. The Research Paper grade is 5% of the final grade. Research papers must be between 2300 and 3300 words (about 5-6 pages of text based on 11-pt or 12-pt font; word count per MSWord's word count tool) and be no longer than ten pages, including illustrations and title page. Papers must contain a summary of no more than 250 words (included in word count), at least three primary, peer-reviewed references, and be structured as follows: (1) Title page with title and author; (2) Abstract; (3) Introduction (background and rationale for paper topic choice); (4) Discussion (basically what you learned and want to share with your colleagues as a result of your research); (5) Conclusion (highlight or restatement of most crucial learning's from your perspective and why you chose the particular topic); and (6) references (minimum of five primary references. Wikipedia is not considered and please use scientific references. Both Figures and tables (with captions and references) may be included within the text or at the end of the paper. Papers submitted one week late will be docked 10 points; thus, a paper that would have received an 85% grade if submitted on time will receive a final grade of 75% if submitted one week late. Research papers submitted more than a week late will be given a grade of zero. The research paper grade is determined based on format compliance (up to 60% of paper grade) and logical reasoning (up to 40%). Lecture exams, lab quizzes, and lab completion grades are curved" by a simple arithmetic adjustment, so the class average is ~76-80%. Note that this only applies to students whose lab and class attendance is unquestionable and who have submitted their quizzes, exams, lab assignments, and research paper. All components of your final grade must be completed by December 08, 2023. The assignments will be posted on D2L and due dates are listed in the syllabus. No homework, lab assignments, or research papers 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	10%
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.
Research Paper	5%

**Table 2:** Final grades are 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 promptly make up any missed material. Students must email their lab TA and Dr. Katumwehe in advance of 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 have a time limit of 50 minutes for the two "midterm" exams and 110 minutes for the final exam

### **Research Paper**

See the Grading Section for details about content and format. All Research Papers must be submitted in Microsoft Word to [andrew.katumwehe@msutexas.edu](mailto:andrew.katumwehe@msutexas.edu) and D2L Dropbox

### **Lecture (Attendance) Extra Credit**

Expect minimum extra credit opportunities irregularly and randomly, especially during lectures. Each additional credit opportunity will be worth up to one (1.0) different 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, take 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 exceptional extra credit opportunities; however, different quizzes, attendance, and on spot assessments are the way to make additional points.

### **Late Work**

Late work will be accepted through 12/08/2023 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 fall 2023 schedule of classes.**

The last day to drop this course with a grade of "W" is 4 pm, October 30, 2023. 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 program's technicians or your Instructor.

## **Online Exam Requirements**

Taking a course with considerable online classes requires you to have 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 as 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 both liability and resource limitations however, they are able to help you get connected 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 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.

## **Services for Students with Disabilities**

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990, MSU 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 an application for such assistance through Disability Support Services, located in the Clark Student Center, room 168. Documentation of a disability will be needed 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 is 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 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 checklist](#) and grade [appeal checklist](#).

## **Learning Environment**

Mosaic Cross cultural Resource Center: <https://msutexas.edu/student-life/mosaic/mosaic-resources-overview-page.php>.

General Student complaint: <https://msutexas.edu/student-life/dean/general.php>.

Sexual misconduct: <https://msutexas.edu/titleix/>.

## **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 a lookout for course news and schedule updates regularly.

Course schedule details are given on the next 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 date, 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>
28- Aug	Course Overview. What is Science? What is the Scientific Method? Geology as a Science. Why Study Geology?	Pages 2-13
30- Aug	Earth Systems	Pages 13-17
01- Sept	Internal Structure of the Earth <b>Assignment 1</b>	Pages 19-35
<b>04- Sept</b>	<b>Labor Day</b>	<b>No Classes</b>
06- Sept	Plate Tectonics - Part 1	Pages 36-71
08- Sept	Plate Tectonics - Part 2 Assignment 2	Pages 36-71
11- Sept	Mineral and Matter - Part 1. Basic Concepts	Pages 72-105
13- Sept	Mineralogy - Part 2. Important Mineral Classes <b>Assignment 3</b>	Pages 72-105
15- Sept	Igneous Rocks and Minerals - Part 1.	Pages 106-139
18- Sept	Igneous Rocks and Minerals - Part 2. Magma and Intrusive Igneous Activity	Pages 106-139
20- Sept	Igneous Rocks and Minerals - Part 3. Magma and Intrusive Igneous Activity	Pages 106-139
22- Sept	Igneous Rocks and Minerals - Part 3. Volcanoes and Associated Hazards <b>Assignment 4</b>	Pages 140-179
13- Sept	Weathering and Soil Formation	Pages 180-209
15- Sept	Sedimentary Rocks - Part 1.	Pages 210-239
17- Sept	Sedimentary Rocks - Part 2.	Pages 210-239
20- Sept	Sedimentary Rocks - Part 3. Sedimentary Textures and Depositional Environments <b>Assignment 5</b>	Pages 210-239
22- Sept	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
25- Sept	<b>Review 1</b>	
27- Sept	<b>FIRST EXAM</b> (will cover all material through February 18) - 10% of grade	N/A
29- Sept	Sedimentary Rocks - Part 5. Geology of Oil and Natural Gas <b>Assignment 6</b>	N/A
02- Oct	Metamorphic Rocks - Part 1. Metamorphism, Metamorphic Textures, Common Metamorphic Rocks	Pages 240-271
06- Oct	Metamorphic Rocks - Part 2. Burial/Regional Metamorphism	Pages 240-271
09- Oct	Metamorphic Rocks - Part 3. Contact and Hydrothermal Metamorphism; Economic Geology of Metamorphic Rocks <b>Assignment 7</b>	Pages 240-271
11- Oct	Time and Geology. Relative time and absolute time scale	Pages 272-281
13- Oct	Crustal Processes - Surface Geological Observations; Deformation - Folds and Fractures	Pages 302-325
16- Oct	Crustal Processes - Earthquakes	Pages 326-361
18- Oct	<b>SECOND EXAM</b> (will cover all material presented or assigned through March 12) - 20% of grade	
20- Oct	Crustal Processes - Oceans	Pages 386-417
23- Oct	Crustal Processes - Mountains	Pages 418-441
25- Oct	Crustal Processes - Mass Wasting	Pages 442-465
27- Oct	Crustal Processes - Mass Wasting <b>Assignment 8</b>	Pages 442-465
30- Oct	Crustal Processes - Surface and Running Water <b>Assignment 9</b>	Pages 466-499
01- Nov	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
03- Nov	Crustal Processes - GroundWater	Pages 500-531
06- Nov	Climate Change – Part II <b>Assignment 12</b>	Pages 630-665
08- Nov	Crustal Processes - GroundWater <b>Assignment 10</b>	Pages 500-531
10- Nov	Crustal Processes - Glaciers	Pages 532-569
13- Nov	Crustal Processes - Part 7. Winds and Deserts <b>Assignment 11</b>	Pages 570-593
15- Nov	Crustal Processes - Part 8. Oceans and Shorelines	Pages 594-629
17- Nov	Climate Change – Part II <b>Assignment 12</b>	Pages 630-665
20- Nov	Climate Change – Part II <b>Assignment 12</b>	Pages 630-665
<b>21-26 Nov</b>	<b>Thanksgiving Break</b>	<b>No Class</b>
27- Nov	Climate Change – Part II <b>Assignment 12</b>	Pages 630-665
29- Nov	<b>Third Exam Review</b>	
01- Dec	Course and Final Exam Review	Last Day to Submit Any Late Assignments! Grade Penalties per the Course Syllabus May Apply. Nothing is accepted after 4 pm CDT.
Dec 113-10:30 -12:30 am	<b>THIRD EXAM</b> (will cover all material presented in the lecture and the lab section of the course) - 20% of the 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
28, 29, 31-Aug	Lab #1 - Mineral Identification – Lab Book Section 3	
<b>4-7 Sept</b>	<b>Labor Day</b>	<b>No Labs</b>
11, 12, 14-Sept	Lab #2 Mineral Identification – Lab Book Section 3.	HW 1 and Assessment 1
18, 19, 21- Sept	Lab #3 Mineral Identification – Lab Book Section 3	HW 2 and Assessment 2
25, 26, 28- Sept	<b>Lab Mineral Quiz - 5% of the grade.</b> Also, Lab #4 Introduction to Rocks - Lab Book Section 4	HW 3 and Assessment 3
02, 03, 05- Oct	Lab #5 Igneous Rocks - Lab Book Section 5	HW 4 and Assessment 4
09, 10, 12- Oct	Lab #6 Sedimentary Rocks – Lab Book Section 6	HW 5 and Assessment 5
16, 17, 19- Oct	Lab #7 Metamorphic Rocks – Lab Book Section 7	HW 6 and Assessment 6
23, 24, 26- Oct	<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
30, 31-Oct, 02-Nov	Lab #9 - Topographic Maps and Earthquakes	HW 8 and Assessment 8
06, 07, 09-Nov	Lab #10 - Geological Structures, Block Diagrams, and Maps	HW 9 and Assessment 9
13, 14, 16-Nov	Lab #11 River Processes and Hazards – Lab Book Section 11	HW 10 and Assessment 10
<b>21-26 Nov</b>	<b>Thanksgiving Break</b>	<b>No Class</b>
04, 05, 7-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, <b>Lab Quiz, Research Paper</b>	Homework and Self-Assessment Assignments
08-Dec		<b>Research Paper</b> Due by 4 pm. Note: Electronic (MSWord) Versions must be submitted for 5% of the final grade
04, 05, 07 -Dec	<b>LAB FINAL QUIZ (includes Rocks and Minerals) - 10% of grade</b>	None
08- Dec		Last Day to Submit Any Late Assignments! Grade Penalties per the Course Syllabus May Apply

End of the course syllabus