Course Syllabus Final: Physical Geology Online

McCoy College of Science, Mathematics, and Engineering
GEOS 1134 Section X20
Spring 2021

Contact Information

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Course Instructional Mode

This course is presented fully online. All lectures and course reviews are in D2L as voice-over .mp4 files and standard printable .pdf files. Normally, the lab exercises use a lab kit third provided by a third party provider (eScience) and all students must purchase the required lab kit. Due to Covid-19 and supply chain problems, no lab kits will be used this semester. Instead, all lab exercises will be provided in D2L. All Lectures (PowerPoint and Voice-over .mp4 files), Course Reviews (also PowerPoint and Voice-over .mp4 files), Labs, Homework, and Self-Assessments are provided in D2L. All exams are administered online using D2L. The instructor may be contacted by email. Note that all D2L-related issues and technical problems should be handled via D2L support at this link: https://msutexas.edu/distance/online-courses.php

Course Description

A Lecture-based overview of the Earth, its mineral and rock components, and the variety of physical processes, both surface and subsurface that have operated over the long history of Earth. Lectures, by their very nature are of limited length and cover only the most essential aspects of the 24 topics that comprise this course. These topics include the 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 subsurface processes such as weathering, erosion, mass movement due to water, wind, and gravity that largely shape the Earth's surface. We will also examine the subsurface processes that affect us such as earthquakes and volcanic activity and their associated hazards. Running throughout the course and providing a unifying theory for much of geology is the theory of plate tectonics originally put forward as a hypothesis in the early 1900's and only became widely accepted about 50 years ago. In addition to the PowerPoint-based lectures, you are also expected to read the appropriate chapters in the required course textbook or textbook of choice. This course outline/syllabus contains a detailed schedule including a list of specific topics and corresponding textbook readings.

The Lab portion of the course includes projects ranging from mineral and rock identification to using and understanding topographic and geological 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 more dramatic geological processes such as floods, earthquakes, tsunamis and volcanoes. At the end of this course, you will be familiar with the structure of 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 "quiet" regions such as the eastern portion of the United States. You will also understand the role of rivers, winds, oceans, and gravity that continuously shape the Earth's surface and how those processes impact each of us. Climate Change will also be addressed.

Instructional Materials

Earth: An Introduction to Physical Geology (Tarbuck, 12th Edition) is the recommended textbook. Note that many students find either an online textbook substitute (for example, https://open.umn.edu/opentextbooks/textbooks/physical-geology) or a buy/rent a lower cost textbook.

Student Handbook

Refer to: https://msutexas.edu/student-life/_assets/files/handbook.pdf or most recent MSUTexas 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 also in the Student Handbook.

Grading

There will be three lecture exams, the first two will each determine 15% of your final grade and the third ("final") exam will determine 20% of your course grade. Note that all lecture exams are "cumulative and comprehensive"; all prior material covered in lecture and lab, textbook readings, and any assigned readings will be included on exams. The "lecture" portion of the course will thus account for 50% of your final course grade. The "lab" portion of your grade will account for a total 40% of your final course grade. The lab grade will be derived as follows: 75% based on assigned labs, 20% on homework assignments, 5% on your participation in online discussions (quality rather than quantity of contribution is most important), and 10% from the assessments. The assessments will help you assess your mastery of both the lab and the lecture

material. Although you will receive a numerical assessment grade, the assessments are counted as completed or not as far as your final course grade is concerned. If you complete 75% of the assessments, your assessment component "grade" for the semester is 75%; if you complete only 40% of the assessments, your assessment "grade" for the semester is 40%. Completion of all lab assignments on time is expected. Lab assignments are submitted via D2L and due per the syllabus. Given appropriate notice, labs must be made up within a week or two and a lab exercise grade penalty may be imposed (10% for one week past due; 20% for two weeks past due; 30% for three weeks past due). After three weeks, a missed lab may be given a grade of zero. Lab assignments are given in the syllabus and correspond to labs in the Lab Kit. You will be able to access the lab assignment directions via D2L or the eScience website. Homework assignments will also be given during the course of the semester. The homework assignments will be posted in D2L. The homework assignments will include questions to answer that focus on lecture and lab content. The homework assignments will have a due date and a grade penalty assessed for late assignments as follows: 10% for one week past due; 20% for two weeks past due; after three weeks a grade of zero for the missed homework may be recorded. Homework will be submitted via D2L (look for assignment specific dropboxes!). Homework due dates are listed in the syllabus at the end of this document. Finally, your Research Paper (details in separate section below) will account for the remaining 10% of your final grade. An electronic (MSWord or .pdf) version of your completed Research Paper is due per the syllabus schedule. The penalty for late submission of the research paper is as follows: 10% for one day past due; 20% for two days past due; 30% for days weeks past due; after three days a grade of zero may be recorded for the Research Paper grade. The topic for your Research Paper is due per the syllabus schedule. Note: No work may be submitted after 12/5/2020. Note that grades are normally rounded up to the nearest integer before assigning the final course letter grade. This means, for example, that a final calculated course grade of 89.8% will be rounded up to a final course grade of 90.

Table 1: Points allocated to the various graded items or item groups

Graded Items	Contribution to Final Course Grade
Exams 1 and 2 (each)	15%
Exam 3 (Final Exam)	20%
Lab Assignments (11 in total)	30% (total)
Homework Assignments (12 in total)	4% (total)
Research Paper	10%
Discussion Questions	2% (if applicable)
Self-Assessments (12 in total)	4% (total)

Table 2: Final grades determination

Grade	Calculated Points or Percent (%)
A	90-100
B	80-89
C	70-79
D	60-69
F	Less than 60

Homework

See Grading Section for details – All Homework must be submitted via the appropriate and specific D2L dropbox.

Lab Assignments

See Grading Section for details – All Lab Assignments must be submitted via the appropriate and specific D2L dropbox.

Exams

See Grading Section for details – All Exams will be provided in D2L. Details regarding the "open" period for completing the exams are provided in the Grading Section above. All exams will have a time limit of 50 minutes for the two "midterm" Exams and 110 minutes for the Final Exam. The exams will be open for a minimum of 24 hours. Student who have worked with DSS may be given additional time to complete exams.

Research Paper

The Research Ppaper grade is 10% of final course grade. Research papers must be between 2250 and 3250 words (about 4-6 pages of text not counting any illustrations and based on 11-pt or 12-pt font; word count per MicroSoft Word's word count tool) and be no longer than thirteen total pages including illustrations and title page. Figures and/or tables (with captions) may be included within text or at end of paper. Proper credit must be given for figures, maps, pictures that you include in your report. Also, internal citations in the text must be used to

document your source of information. Normally there is at least one internal citation per paragraph. Format for the report is MS Word or pdf file. The digital copy to be submitted per the course schedule/syllabus. Your paper must be organized as follows:

1. Title and author name on front page. Nothing else on the front page, please!
2. Abstract – 250 word limit summarizing your paper including a sentence on why you chose the particular topic.
3. Introduction – Opening paragraphs of your paper that describe the topic in general, its importance or application to you and the community, and why you choose the particular topic (may be a repeat of the sentence used in the abstract).
4. Main Body – Discussion of what your research revealed to you and what you want to share.
5. Conclusion(s) – The key messages or "take-away" points that you expect the reader to remember.
6. References – List of references you used to research and write your paper; minimum number of references is three.

Failure to follow the organizational and heading structure given above is an automatic 10% grade deduction! Failure to meet the length requirement may result in additional 10% grade deduction. Failure to properly cite your sources (in the text and illustration capotions) may result in another 10% grade reduction. Please make sure that for any map, picture, graph, or other illustrations that you have used in your paper that you provide the source/reference in the item's caption.

Papers are due as per the syllabus schedule. Grade penalties of one letter grade per day late may apply.

Note: No work may be submitted after 12/5/2020. All Research Papers must be submitted in Microsoft Word or PDF format via the appropriate and specific D2L dropbox.

Extra Credit

There are no Extra Credit opportunities in this course though that may be changed by the instructor without notice.

Late Work

Late work will be accepted through 12/7/2020. However, the following penalties will apply in all cases of late submittals (unless other arrangements have been made in advance): 10% for one week past due; 20% for two weeks past due; 30% for three weeks days past due. Submissions more than three weeks overdue may be given a grade of zero. No course assignments will be accepted after 12/7/2020. All assignments missing as of 12/7/2020 will be given a grade of zero.

Important Dates

Last Day to drop with a grade of "W:" 4pm, December 4, 2020
Refer to: Drops, Withdrawals & Void

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.

Online Computer Requirements

Taking an online class requires you to have access to a computer with reasonable Internet access to complete and upload your assignments. It is your responsibility to have (or have 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 discussion postings. Computers are available on campus in various areas of the buildings as well as the Academic Success Center. Your computer being down is not an excuse for missing a deadline! There are many places to access your class! Our online classes can be accessed from any computer in the world which is connected to the internet. Contact your instructor immediately upon having computer trouble if you have technical difficulties in the course, there is also a student helpdesk 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**.**

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).

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, or by phone at (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.

College Policies

Campus Carry Rules/Policies are given here: Campus Carry Rules and Policies

Smoking/Tobacco Policy

College policy strictly prohibits the use of tobacco products in any building owned or operated by WATC. Adult students may smoke only in the outside 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 prohibits 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 who wish to appeal a grade should consult the Midwestern State University Undergraduate Catalog

Notice

Changes in the course syllabus, procedure, assignments, and schedule may be made at the discretion of the instructor. Changes will be communicated to all students through D2L**.** Please check the course news on a regular basis for schedule updates.

Course Schedule

The course schedule detail given on the next five pages. The first table lists lecture topics and associated textbook readings. The second table lists the dates for the three exams as well as the lab, research paper, homework, and self-assessment assignments submission deadlines. Note that the Course Schedule

may be changed by the instructor at any time. Should a change be made, it will be communicated via D2L "News".

Detailed course schedule is provided on the following pages.

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

Date	Topic and Topic Number	Textbook Pages
11-Jan	Course Overview. What is Science? What is the Scientific Method? Geology as a Science. Why Study Geology? (Topic 1)	Pages 2-13
13-Jan	Time and Geology - Relative Time, Absolute Time, Age of the Earth. (Topic 2)	Pages 272-281
15-Jan	Seismology and the Gross Internal Structure of the Earth (Topic 3)	Pages 19-35 and Pages 362-385
18-Jan	MLK – No Class	
20-Jan	Plate Tectonics as the Unifying Principle for Geology - Part 1 (Topic 4)	Pages 36-71
22-Jan	Plate Tectonics as the Unifying Principle for Geology - Part 2 (topic 4)	Pages 36-71
25-Jan	Mineralogy - Part 1. Basic Concepts (Topic 5)	Pages 72-105
27-Jan	Mineralogy - Part 2. Important Mineral Classes and Specific Minerals (Topic 5)	Pages 72-105
29-Jan	Igneous Rocks - Part 1. Introduction (Topic 6)	Pages 106-139
1-Feb	Igneous Rocks - Part 2. Magma and Intrusive Igneous Activity (Topic 6)	Pages 106-139
3-Feb	Igneous Rocks - Part 2. Magma and Intrusive Igneous Activity (Topic 6)	Pages 106-139
5-Feb	Igneous Rocks - Part 3. Volcanoes and Associated Hazards and Economic Geology of Igneous Rocks (Topic 7, 8)	Pages 140-179
8-Feb	Weathering and Soil Formation (Topic 9)	Pages 180-209
10-Feb	Sedimentary Rocks - Part 1. (Topic 10)	Pages 210-239
12-Feb	Sedimentary Rocks - Part 2. (Topic 10)	Pages 210-239

Course Schedule – Lecture Topics and Exams, Text Reading (Page 2 of 3)

Date	Topic and Topic Number	Textbook Pages
15-Feb	Sedimentary Rocks - Part 3. Sedimentary Textures and Depositional Environments (Topic 10)	Pages 210-239
17-Feb	Sedimentary Rocks - Part 4. Diagenesis and Lithification; Economic Geology of Sedimentary Rocks excluding Oil and Gas* (Topic 11)	Pages 210-239
19-Feb	Review 1	None
22-Feb	**FIRST EXAM** (will cover all material through October 3) - 15% of grade. **Exam open time TBA.**	None
24-Feb	Sedimentary Rocks - Part 5. Geology of Oil and Natural Gas (Topic 11)	TBA
26-Feb	Metamorphic Rocks - Part 1. Metamorphism, Metamorphic Textures, Common Metamorphic Rocks (Topic 12)	Pages 240-271
1-Mar	Metamorphic Rocks - Part 2. Burial/Regional Metamorphism (Topic 12)	Pages 240-271
3-Mar	Metamorphic Rocks - Part 3. Contact and Hydrothermal Metamorphism; Economic Geology of Metamorphic Rocks (Topic 12)	Pages 240-271
5-Mar	Crustal Processes - Surface Geological Observations; Deformation - Folds and Fractures (Topic 14)	Pages 302-325
8-Mar	Crustal Processes - Surface Geological Observations; Deformation - Folds and Fractures (Topic 14)	Pages 302-325
10-Mar	Crustal Processes - Earthquakes (Topic 13)	Pages 326-361
12-Mar	Crustal Processes – Oceans (Topic 15)	Pages 386-417

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

Date	Topic and Topic Number	Textbook Pages
15-Mar	Crustal Processes – Mountains (topic 16)	Pages 418-441
17-Mar	Crustal Processes - Mass Wasting (Topic 17)	Pages 442-465
19-Mar	Crustal Processes - Mass Wasting (Topic 17)	Pages 442-465
22-Mar	Crustal Processes - Surface and Running Water (Topic 18)	Pages 466-499
24-Mar	Crustal Processes - Surface and Running Water (Topic 18)	Pages 466-499
26-Mar	Crustal Processes - Ground Water (Topic 19)	Pages 500-531
29-Mar	**SECOND EXAM** (will cover all material presented or assigned through March 26) - 15% of grade. **Exam open time TBA.**	None
31-Mar	**No Class**	
2-Apr	**No Class**	
5-Apr	Crustal Processes - Ground Water (Topic 19)	Pages 500-531
7-Apr	Crustal Processes – Glaciers (Topic 20)	Pages 532-569
9-Apr	Crustal Processes - Oceans and Shorelines (Topic 21)	Pages 570-593
12-Apr	Crustal Processes - Winds and Deserts (Topic 22)	Pages 594-629
15-Apr	Climate Change - Experimenting on a Small Planet (Topic 23)	Pages 630-665
19-Apr	Climate Change - Additional Detail (Topic 23B)	Pages 630-665
21-Apr	A Very Short Version of Earth's Geological History	Pages 666-701;
23-Apr	**THIRD EXAM** (will cover all material presented in the lecture and the lab section of the course) - 20% of grade. **Exam open time TBA.**	**Last Day to Submit Any Late Assignments!**

Course Schedule – Due Dates for Labs, Homework, Research Paper, and Self-Assessment Notes

Date	Lab Assignment Due Dates	Homework and Self-Assessment Assignments Due Dates
Jan – 11	None	None
Jan – 18	None	HW 1 and Assessment 1
Jan – 25	Lab A: Geological Age Dating	HW 2 and Assessment 2
Feb – 1	Lab B: Mineral Identification	HW 3 and Assessment 3
Feb – 8	Lab C: Igneous Rock Classification	HW 4 and Assessment 4
Feb – 15	Lab D: Sedimentary Rock Classification	HW 5 and Assessment 5
Feb – 22	Lab E: Metamorphic Rock Classification	HW 6 and Assessment 6
Mar – 1	Lab F: Plate Tectonics and Earthquakes	HW 7 and Assessment 7
Mar – 8	Lab G: Lab 8 - Mass Wasting/Angle of Repose. Also, **Research Paper Topic is Due.**	HW 8 and Assessment 8
Mar – 15	Lab H: Fluvial Processes and Landforms	HW 9 and Assessment 9
Mar – 22	Lab I: Groundwater	HW 10 and Assessment 10
Apr – 5	Lab J: Wind, Desert Processes and Landforms	HW 11 and Assessment 11
Apr – 12	Lab K: Topographic and Geological Maps	HW 12 and Assessment 12.
Apr – 19	**Research Paper Due by 4pm.**	
Apr – 23	**Last Day to Submit Any Late Assignments for Partial Credit**	**Items must be submitted by 4pm CDT. Grade penalties per the course syllabus may apply.**

End of course syllabus