

SYLLABUS
Physical Geology GEOL 1403
Fall, 2016
Sect. 040-MWF 10-10:50 AM VIN160
Sect. 060- Tuesday and Thursday 9:30-10:45 AM VIN 139
Lab section 09Z M 3-4:50 PM VIN 139
Lab Section 15Z R 3-4:50 PM VIN 139

Professor: Dr. Fawn M. Last **Office:** 130 VIN **Phone:** 325-486-6987

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Office hours: Monday 9-10, 1-2; Thursday 1-2; Friday 9-10; or by appointment. When my door is open you are welcome to come by.

Required Texts:

1. *Earth: Portrait of a Planet, Fifth Edition, Stephen Marshak*
2. *GEOL 1403, Physical Geology Laboratory Manual, Heather L. Lehto.*

Grading

- 2 exams (15% each)
- 1 final exam (20%)
- 2 lab quizzes (10% each),
- 8 graded lab exercises (3% each)
- 1 article summary of a geoscience article of your choice; you must come see me in person to have the topic / paper approved (6%)
- Extra Credit (up to 5% total) Hand in the answers to the questions from two of the videos that we watch in class (2.5% each)
- Make up a single lab exercise by participating in an optional field trip (see below) and turning in a brief project.

Student learning objectives

You will learn about rocks and minerals that make up Earth, and the sometimes subtle and often destructive processes that shape it. You will learn to:

- 1) Understand and apply the scientific method.
- 2) Describe and draw Earth's layers based on chemical and physical differences.
- 3) Describe the theory of plate tectonics, identify the types of plate boundaries and the landforms associated with each type.
- 4) Describe and understand the rock cycle and the three types of rocks involved.
- 5) Identify rocks and minerals.
- 6) Identify potential natural hazards in an area.
- 7) Place geological events in order based on relative and numerical ages.

- 8) Understand the flow and movement of water as well as the landforms it creates.
- 9) Understand the concept of mass movement.
- 10) Have a basic understanding of glacial processes and landforms.
- 11) Be able to understand the basics of climate and environmental change.

Learning outcomes will be evaluated on exams, lab projects, a writing assignment and an IDEA course evaluation.

Core curriculum student learning outcomes

The following core curriculum learning outcomes will be met and measured in this course; critical thinking skills (CT), communication skills (COM), empirical and qualitative analyses (EQS) and teamwork (TW). Upon completion of this course students should also be able understand the scientific method and be able to use it when tackling geologic problems. These outcomes will be assessed by lab assignments and quizzes (EQS, CT), tests (CT, EQS), in-class group projects (TW) and a writing assignment (COM).

Field Trips:

On field trips you will get a chance to apply concepts discussed in class to describe and interpret outcrops of rocks and sediments. On the optional weekend trips we will travel in university vehicles. No special equipment is required but space is limited! You may go on more than one optional trip, but you can only use one field trip project to replace a single lab assignment grade.

Tentative schedule:

1) **Required** field trip to San Angelo State Park during lab time. Monday-Thursday afternoon October 31-November 3. We will meet at San Angelo State Park to review and practice rock and mineral identification skills on Permian and younger rocks. Leaders: Joe Satterfield, James Ward, Fawn Last, Bob Purkiss and Heather Lehto.

2) **Optional** field trip to Big Bend National Park. Friday-Sunday, November 11-13. Physical Geology field trip to western Big Bend National Park: hike and sketch Cretaceous stratigraphy in Santa Elena Canyon, collect shark teeth and dinosaur bone fragments in Terlingua area, describe Tertiary volcanic rocks in Tuff Canyon and Chisos Mountains. Leaders: James Ward, Joe Satterfield.

3) **Optional** field trip to Favorite San Angelo area outcrops in the San Angelo area. Saturday, December 10. We will meet early in the morning and return in the mid-afternoon. We will visit Spillway Hill, the Nasworthy Dam, the Concho River in Downtown San Angelo, a working oil well and tank battery, a fossil collecting locality in the Edwards Plateau on Devil's Courthouse Mountain, and perhaps the Devereaux's sustainable organic farm on the Concho River east of town. Leaders: Joe Satterfield, James Ward, Fawn Last, and Heather Lehto.

Attendance Policy

You are expected to attend every class meeting. Your attendance will be recorded. We will discuss many topics that are not in the textbook. Although there will be PowerPoint notes on Blackboard, they will be limited and will not be complete. If you must miss a class, please contact me. Make sure that you get notes from your colleagues and ask about assignments. Although showing up for class is not directly part of your grade (see Grading section above), you will find it extremely difficult to pass this class if you do not attend regularly and participate!

Cell Phones and Other Electronic Devices

Cell phones must be turned off while in class. In addition, it is unacceptable to engage in text messaging during the class meeting time. If you are using any electronic devices other than a calculator (not your phone in calculator mode), a voice recorder, or a laptop computer to take notes, you may be asked by the instructor to leave the classroom for the remainder of the class period. The use of any electronic device not authorized by the instructor during a test may result in the forfeiture of your grade for that test. All electronic devices should be turned off and stored out of sight during tests.

Course Webpage

<http://blackboard.angelo.edu> contains PowerPoint slides, web links to scenic areas mentioned in class, practice problems, answers to lab assignments, and your official grades.

Know the ASU Honor Code

Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is contained in both print and web versions of the Student Handbook.

Student Organizations

GEO (Geologic Exhibition Organization), the student organization of all interested in geology, meets Wednesdays at 7:00 pm. The first meeting will be September 7 at 6 PM. GEO is a student chapter of the American Association of Petroleum Geologists (www.aapg.org). Sigma Gamma Epsilon, the national honor society of the earth sciences is also active at Angelo State University.

You Can Major or Minor in Geology at ASU!

See Geoscience BS requirements at

https://www.angelo.edu/dept/physics/geoscience_degree.php An Earth

Science Minor requires 18 hours of geology courses. Physical Geology is a requirement for a major or a minor.

Rewarding careers exist for geologists, geophysicists, hydrogeologists, and secondary science teachers. Talk to your professors! Read <http://www.bls.gov/ooh/life-physical-and-social-science/print/geoscientists.htm>

Statement of Persons with disabilities

Persons with disabilities, which may warrant academic accommodations must contact the Student Life Office, Room 112 University Center, in order to request such accommodations prior to any accommodations being implemented. You are encouraged to make this request early in the semester so that appropriate arrangements can be made.

Statement of religious holy days

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.

Tentative Schedule (subject to change)

Week	Lecture/discussion topics	Lab Exercises
I August 29	Syllabus, Readings Ch. 1-2 Planet Earth	1. Topographic maps and aerial photos (pre lab reading p1-7)
II September 5	NO CLASS Monday, Sept 5 Plate Tectonics Readings Ch. 3-4	No labs this week! Labour Day Holiday Monday
III September 12	Plate Tectonics Minerals Readings Ch. 5.	2. Rock-forming minerals (p.18-29)
IV September 19	Igneous Rocks Readings Ch. 6.	3. Igneous Rocks (p. 34-37)
V September 26	Sedimentary Rocks Readings Ch. 7.	No labs this week
VI October 3	Exam 1 Chapters 1-7 Metamorphic Rocks Readings Ch. 8.	4. Sedimentary Rocks (p. 42-48)
VII October 10	Volcanic eruptions Readings Ch. 9.	5. Metamorphic Rocks (p. 54-57)
VIII October 17	Earthquakes Readings Ch.10.	Lab Quiz 1 Minerals and rocks (Labs 2-5)
IX October 24	Mountain Building Geologic Time Readings Ch.11 and 12	6. San Angelo State Park Field Trip (Required): Meet at State Park (directions and reading: p 62-63)
X October 31	Geologic Time Energy Resources Readings Ch. 14	7. Block Diagrams of folded and faulted rocks (p.68-74)
XI November 7	EXAM 2 Chapters 8-12 Mass movement Readings Ch.16.	8. Constructing a geologic cross section Part I (p 90-92)
XII November 14	Streams Readings Ch. 17.	8. Constructing a geologic cross section Part II
XIII November 21	Deserts Readings Ch. 21.	No labs this week
XIV November 28	Glaciers and ice ages / Global change Readings Ch 22-23.	Review for Lab quiz 2
XV December 5	Review	Lab Quiz 2: Topographic and Geologic Maps (Labs 1, 6-8)
XVI December 12	FINAL EXAM December 12 10:30 am (sect 040) December 15 8:00 am (Sect 060)	No Labs