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Is Table: false
Is Diagram: false

**GEOL 1403: Physical Geology**  
*4 credits*  
*Fall 2018*

Section 70: MWF 8:00 am - 8:50 am VIN 139  
Section 80: TR 9:30 am - 10:45 am VIN 139  
Section 40: TR 11:00 am - 12:15 pm VIN 158  
Lab Section 11Z: W 3:00-4:50 pm VIN 139  
Lab Section 12Z: R 1:00-2:50 pm VIN 139  
Lab Section 13Z: R 3:00-4:50 pm VIN 139

**Instructor:** Dr. Elizabeth C. Koeman-Shields  
**Office:** VIN 124  
**Phone:** 325-486-6767 (office)  
**Email:** ekoeman@angelo.edu

**Office Hours:** MWF 9:00 am - 11:00 am and T 1:00 pm - 3 pm, or by appointment

**Required Materials:**
- SmartWork for Earth Portrait of a Planet [SmartWork information](#)  
- ASU email account that you check regularly  
- [Blackboard course site](#)

**Student Learning Outcomes:**
This course is designed to familiarize the student with the processes, principles, and theories involved in Physical Geology. The student will practice the scientific method, including generating and testing hypotheses, while acquiring knowledge in Physical Geology. The student will also learn and practice how to study and work together and how to carefully defend their thinking when answering questions or participating in a discussion. Learning outcomes will be evaluated by homework, lab assignments, quizzes, and exams. At the end of this course, the student will be able to:

1. Describe the scientific method and discriminate between scientific and nonscientific information.
2. Describe and draw the layers of the Earth, including the chemically and physically different layers.
3. State the age of the Earth as determined by scientific means and describe the Geologic Time Scale.
4. Place geologic events in order using the geologic principles and correlate layers on a regional scale.
5. Describe the theory of plate tectonics including identifying plate boundaries, describing plate motions at boundaries, and identifying landforms/features associated with each boundary.

6. Relate the theory of plate tectonics to the locations and occurrence of geologic hazards including earthquakes, tsunamis, and volcanic activity.

7. Define what a mineral is and describe the relationship of minerals to rocks.

8. Describe the rock cycle, listing and relating its products and processes.

9. Identify rocks and minerals and describe their formation processes.

10. Define and describe the processes of weathering, erosion, and mass movement (mass wasting.)

11. Describe fluvial processes and landforms.

12. Describe the origin and nature of glacial landforms

13. Describe how climate changes and what affect humans have on climate change.

**GRADING:**

- 8 Graded Lab Assignments (2.5% each) 20%
- 6 Pre-lab quizzes (0.5% each) 3%
- 2 Lab Quizzes (10% each) 20%
- 4 SmartWork HW Assignments (3% each) 12%
- 3 Lecture Exams (7% each) 21%
- 1 Final Comprehensive Exam 14%
- Daily Attendance 10%
- In the form of daily quizzes (based on previous lecture topic and/or assigned reading). There will be no make-ups for daily attendance; however, the lowest 3 scores will be dropped.
- Extra Credit Project (+0-5 pts): Brief, illustrated report about a scientific paper on a geology topic of your own choosing. Details to be provided after Exam 1.
- Make-up a single lab grade by participating on an optional field trip and turning in a brief project report.

There will be no make-ups for homework, in-class activities, or quizzes. Make-up exams will be given for tests ONLY under extenuating circumstances. Prior email notification is needed for a make-up exam.

**SMARTWORK ASSIGNMENTS:**

To complete the SmartWork homework assignments you will need to register with SmartWork using the enrollment code below. Use the following instructions to create an account with SmartWork:

**Register For SmartWork:**
1. Go to the SmartWork page associated with the class book
2. Click on “Sign in, register a code, or purchase access”
3. Select “No, I need to register, purchase, or sign up for trial access.” Click the green button to continue.
4. Fill out all fields and select the “I want to view purchase and class test options” option. Select the free 365 day access. **NOTE:** Use your ASU email as the email address for your SmartWork account. **Don't forget to record your account information for future reference!**

**Access your course in SmartWork:** You will then need to add yourself to the correct student set for your course.

1. Log into SmartWork
2. Click on the gear menu in the upper-right corner of your screen.
3. In the dropdown menu, select “Add Yourself to a Student Set.”
4. In the pop-up window, enter in the five-digit Student Set ID number associated with your class day: MWF 118941, TR 118944.

Access the SmartWork help pages by clicking the gear icon in the upper-right corner of the screen after logging in. This will give you information on how to use the SmartWork system to do your assignments.

For each homework assignment you will complete a list of questions. You can submit answers to the questions up to 4 times, however, each additional submission after the first will cost you a 5% deduction on your grade. So don’t just go guess until you get it right, it will cost you.

**CORE CURRICULUM STUDENT LEARNING OUTCOMES:**
The following list of core curriculum student learning outcomes will be met and measured during this course:

<table>
<thead>
<tr>
<th>Student Learning Outcome</th>
<th>Assessment Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gather, analyze, evaluate, and synthesize information relevant to a question or issue.</td>
<td>Lab Quiz</td>
</tr>
<tr>
<td>2. Develop, interpret, and express ideas through effective visual communication.</td>
<td>Lab Assignment</td>
</tr>
<tr>
<td>3. Manipulate and analyze numerical data and arrive at an informed conclusion</td>
<td>Homework/In-class Assignment</td>
</tr>
<tr>
<td>4. Manipulate and analyze observable facts and arrive at an informed conclusion</td>
<td>Average Lab Grade</td>
</tr>
</tbody>
</table>
5. Work effectively with others to support and accomplish a shared goal.

ATTENDANCE POLICY:
You are expected to attend all scheduled class meetings. Missed daily quizzes CANNOT be made up (that is what the 3 dropped are for). Attendance will be checked at each class meeting via inclass quizzes. Please inform me well ahead of time if you will need to be absent for any reason including religious holidays. NOTE: You are NOT automatically dropped if you stop attending class. November 1st is the last day to drop a course.

CELL PHONES AND OTHER ELECTRONIC DEVICES:
You may use a laptop or tablet to take notes during class. Please do not disturb others with their use. Please keep all electronics on vibrate or silent. 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.

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 22-25. We will meet at San Angelo State Park to review and practice rock and mineral identification skills on Permian and younger rocks. Leader: Your lab instructor

2) **Optional** field trip to Sonora Caverns: Saturday, November 3. This field trip will head to the world famous Sonora Caverns in Sonora, TX to explore this beautiful cave. The cave contains some of the most beautiful and unique cave formations in the world. The tour of the caverns is led by one of the cave guides who will describe both the human and geologic history of the cave. Leader: Heather Lehto.

3) **Optional** field trip to Big Bend National Park: Friday-Sunday, November 9 - 11. Physical Geology field trip to Big Bend National Park: hike and sketch Cretaceous stratigraphy in Santa Elena Canyon, describe Tertiary volcanic rocks in Tuff Canyon, hike to the top of the Lost Mine Trail in the Chisos Mountains. Leaders: Joe Satterfield, Jessica Garza
4) **Optional:** Archaeology Fair and Elementary School Science Nights: Saturday, September 22 at Fort Concho (Archaeology Fair) and evenings to be announced (Science Nights). Opportunities for sharing basics of rocks, fossils, and maps with students, their parents, and interested people of all ages.

**CLASS PREPARATION ASU EMAIL:**
Since class announcements will be routinely distributed via email and Blackboard, you will need to regularly check your ASU email account and our course Blackboard site (daily). All course correspondence will be through your ASU email account and Blackboard. Please see the email policy in Bb for more details. ASU provides Internet and email services to you at any of the computer labs on campus. Call 942-2911 to set this up if necessary.

**LECTURE:**
A typical class meeting will combine mini-lectures, discussions, group activities, multimedia presentations, and other demonstrations and activities to give you an opportunity to learn concepts in as active a manner as possible.

**STUDENTS WITH DISABILITIES:**
ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA), and subsequent legislation.

The Office of Student Affairs is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability, and it is the student’s responsibility to initiate such a request by contacting: Ms. Dallas A. Swafford, Director of Student Disability Services, 325-942-2047

**TITLE IX:**
Angelo State University is committed to the safety and security of all students. If you or someone you know experience sexual harassment, sexual assault, domestic or dating violence, stalking, or discrimination, you may contact ASU’s Title IX Coordinator: Michelle Nicole Boone, J.D., Director of Title IX Compliance, 325-486-6357, michelle.boone@angelo.edu, Mayer Administration Building 204A.

**RELIGIOUS HOLY DAY:**
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.

**INCOMPLETE GRADE POLICY**
It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 Grading Procedures for more information.

**ACADEMIC INTEGRITY:**
Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU. The College of Science and Engineering adheres to the Statement of Academic Integrity.

**PLAGIARISM:**
Plagiarism is a serious topic covered in ASU’s Academic Integrity policy in the Student Handbook. Plagiarism is the action or practice of taking someone else’s work, idea, etc., and passing it off as one’s own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality via Turnitin. Resources to help you understand this policy better are available at the ASU Writing Center.

**COPYRIGHT POLICY:**
Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

**GENERAL POLICIES RELATED TO THIS COURSE:**
All students are required to follow the policies and procedures presented in these documents:

1) Angelo State University Student Handbook
2) Angelo State University Catalog

**GEOLOGIC EXHIBITION ORGANIZATION (GEO):**
GEO, the student organization of all interested in geology (not just majors/minors), meets almost every Wednesday @ 6:00PM. GEO is a student chapter of the American Association of petroleum Geologists (AAPG). Sigma Gamma Epsilon, the national honor society of the earth sciences is related to GEO.
YOU CAN MAJOR OR MINOR IN GEOLOGY @ ASU!
See the BS in Geoscience requirements. A Geology Minor requires 18 hours of geology courses. Good and rewarding careers exist for geologists, geophysicists, hydrogeologists, secondary science teachers, and petroleum engineers. Talk to your professor and read information about geoscience careers.

FINAL NOTE:
It is my goal to make this class both interesting and informative for you. With a reasonable amount of effort, it should be possible for everyone to meet the course objectives and earn a passing grade. With additional effort, aptitude, and investment of time, students may earn even higher course grades. If at any time you run into difficulties with the material, or need assistance or clarification, please do not hesitate to ask for help. I am here for you, and I will be glad to entertain any reasonable requests.

iii http://books.wwnorton.com/books/SmartWork.aspx
iv https://digital.wwnorton.com/earth5
xii https://www.angelo.edu/physics/geoscience_degree.php
xiii http://www.angelo.edu/dept/physics/Geosciences/geoscience_careers.php

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Topics</th>
<th>Assigned Reading</th>
<th>Lab Exercises and Assigned Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1: 8/27 - 8/31</td>
<td>Syllabus Scientific Method Solar System Formation Planet Earth</td>
<td>Prelude (p. 1-9) Chapter 1 Chapter 2</td>
<td>1: Topographic maps and aerial photos (p. 1 - 7)</td>
</tr>
<tr>
<td>#2: 9/4 - 9/7</td>
<td>Continental Drift Plate Tectonics</td>
<td>Chapter 3 Chapter 4</td>
<td>No labs this week! (Labor Day Holiday Monday)</td>
</tr>
<tr>
<td>#3: 9/10 - 9/14</td>
<td>Minerals Igneous Rocks</td>
<td>Chapter 5 Interlude A (p. 141-151) Chapter 6</td>
<td>2: Rock-forming minerals (p. 18 - 29)</td>
</tr>
</tbody>
</table>
| #4: 9/17- 9/21 | Exam #1 (Chapters 1-5)  
Igneous Rocks  
Sedimentary Rocks | Chapter 6  
Chapter 7 | 3: Igneous Rocks  
(p. 34 - 37) |
| --- | --- | --- | --- |
| #5: 9/24 - 9/28 | Sedimentary Rocks  
Metamorphic Rocks | Chapter 7  
Chapter 8 | 4: Sedimentary Rocks  
(p. 42 - 48) |
| #6: 10/1 - 10/5 | Weathering and Erosion  
Rock Cycle  
Volcanoes  
Interlude B (p. 183-200)  
Interlude C (p. 261-268)  
Chapter 9 | Chapter 9  
Chapter 10  
Interlude D (p. 359-377) | 5: Metamorphic Rocks  
(p. 54 - 57) |
| #7: 10/8 - 10/12 | Volcanoes  
Earthquakes Seismicity  
Chapter 11 | Chapter 11 | Review and practice for Lab Quiz |
| #8: 10/15 - 10/19 | Exam #2 (Chapters 6-10,  
Interludes A, B, C)  
Mountain Building | Chapter 11 | LAB QUIZ 1: Minerals And Rocks  
(Labs 2 - 5) |
| #9: 10/22 - 10/26 | Geologic Time  
Energy Resources  
Interlude E (p. 419-433)  
Chapter 12  
Chapter 14 | Chapter 16 Interlude F  
(p. 572-585) | 6: San Angelo State Park Field Trip  
(Required): Meet at State Park.  
Directions: p. 62 - 63 |
| #10: 10/29 - 11/2 | Landslides  
Hydrologic Cycle  
Chapter 16 Interlude F  
(p. 572-585) | Chapter 16 Interlude F  
(p. 572-585) | 7: Block diagrams of folded and  
faulted rocks  
(p. 68 - 74) |
| #11: 11/5 - 11/9 | Streams Oceans  
and Coasts  
Chapter 17  
Chapter 18 | Chapter 17  
Chapter 18 | 8: Constructing a geologic cross  
section Part I  
(p. 90 - 92) |
| #12: 11/12 - 11/16 | Exam #3 (Chapters 11, 12,  
14, 16, 17, Interludes E, F)  
Groundwater  
Chapter 19 | Chapter 19 | 8: Constructing a geologic cross  
section Part II (p. 90 - 92) |
| #13: 11/19 - 11/20 | Atmosphere and Climate  
Chapter 20 | Chapter 20 | No Labs this week! (Thanksgiving  
Holiday Weds-Fri) |
| #14: 11/26 - 11/30 | Deserts Glaciers  
Chapter 21  
Chapter 22 | Chapter 21  
Chapter 22 | Practice for Lab Quiz 2 |
| #15: 12/3 - 12/7 | Climate Change Review  
for Final Exam  
Chapter 23 | Chapter 23 | LAB QUIZ 2: Topographic and  
Geologic Maps (Labs 1, 6-8) |
| #16: 12/10-12/14 | Final Exams | 70: M 8:00-10:00am  
80: R 8:00-10:00am  
40: T 10:30 am-12:30pm | |