Geology of Casa Grande Peak in Big Bend National Park. We will hike nearby during our November field trip! Figure from Spearing (1991)

Professor: Dr. J.I. “Joe” Satterfield
Office: VIN 122
Office phone: 325-486-6766
Physics and Geosciences Department Office: 325-942-2242
E-mail: joseph.satterfield@angelo.edu

Office hours
• Monday: 8:00 – 10:00 am
• Tuesday: 3:00 – 4:00 pm
• Wednesday: 8:00 – 10:00 am, 3:00 – 4:00 pm
• Thursday: 8:00 – 9:00 am, 11:00 – 12:00
• Friday: 8:00 – 10:00 am
• Or contact me to set up a convenient time to meet

Required Textbooks
2. SmartWork for Earth Portrait of a Planet, $25 (if you buy a used textbook). SmartWork information

Grading
• 2 exams (15% each)
• 1 comprehensive final exam (20%)
• 2 homework assignments using SmartWork (3% each).
• 2 lab quizzes (10% each),
• 8 graded lab exercises (3% each; includes Pre-lab assignment)
• Extra Credit Project (+ 0 – 5%). Brief, illustrated report about a scientific paper on a geology topic of your own choosing. Details to be provided after Exam 1.
• Optional Field Trip. Make up a single lab or homework grade by participating on an optional field trip and turning in a brief project report. More details on next page.

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. If you must miss a class, contact me if you need help in obtaining assignments or notes. 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!
<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture/Discussion Topics</th>
<th>Lab Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>I:</td>
<td>Minerals (Ch 5, p. 116)</td>
<td>1: Topographic maps and aerial photos (read p. 1 – 7 before lab)</td>
</tr>
<tr>
<td></td>
<td>Journey to the Center of the Earth (Ch 1 and 2, p. 34) Magma and Igneous Rocks (Ch. 6, p. 152) Project: Calculating pluton surface area</td>
<td>No labs this week! (Labor Day Holiday Monday)</td>
</tr>
<tr>
<td>II:</td>
<td>9/4, 9/6</td>
<td>2: Rock-forming minerals (p. 18 – 29)</td>
</tr>
<tr>
<td></td>
<td>Sedimentary Rocks (Ch 7, p. 202) 9/13: Drifting Continents (Ch 3, p. 61)</td>
<td>3: Igneous Rocks (p. 34 – 37)</td>
</tr>
<tr>
<td>V:</td>
<td>9/25, 9/27</td>
<td>5: Metamorphic Rocks (p. 54 – 57)</td>
</tr>
<tr>
<td>VI:</td>
<td>10/2, 10/4</td>
<td>6: San Angelo State Park Field Trip (Required): Meet at State Park. Directions: p. 62 – 63</td>
</tr>
<tr>
<td>VII:</td>
<td>10/9, 10/11</td>
<td>7: Block diagrams of folded and faulted rocks (p. 68 – 74)</td>
</tr>
<tr>
<td>VIII:</td>
<td>10/16, 10/18</td>
<td>8: Constructing a geologic cross section (p. 90 – 92), Part I</td>
</tr>
<tr>
<td>IX:</td>
<td>10/23, 10/25</td>
<td>8: Constructing a geologic cross section (p. 90 – 92), Part II</td>
</tr>
<tr>
<td>X:</td>
<td>10/30, 11/1</td>
<td>No Labs this week! (Thanksgiving Holidays Weds-Fri)</td>
</tr>
<tr>
<td>XI:</td>
<td>11/6, 11/8</td>
<td>Practice for Lab Quiz 2</td>
</tr>
<tr>
<td>XII:</td>
<td>11/13, 11/15</td>
<td>LAB QUIZ 2: TOPOGRAPHIC AND GEOLOGIC MAPS (Labs 1, 6-8)</td>
</tr>
<tr>
<td>XIII:</td>
<td>11/20</td>
<td>FINAL EXAM: 10:30 – 12:30 am</td>
</tr>
</tbody>
</table>
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 homework or lab assignment grade. The 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. **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

3. **Caverns of Sonora:** Saturday, November 3. 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

4. **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.

Student learning outcomes
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 and test fundamental concepts about meteorite impacts, volcanoes, earthquakes, river flooding, oil and gas resources, groundwater, and plate tectonics. Many examples will be from West Texas and western North America. Problem-solving techniques that you will learn and practice:

- Use multiple working hypotheses
- Be skeptical: look for ways to test hypotheses
- Make sketches: they help in visualizing the world in three dimensions
- Quantify events and processes when possible
- Apply the Principle of Uniformitarianism
- Study and work together
- Get as much practice or experience as you can
- Carefully defend your thinking when answering questions.
- Learning outcomes will be evaluated by exams, lab quizzes, homework assignments, and lab assignments

Course Webpages
The [Angelo State Blackboard site](https://example.com) contains PowerPoint slides, web links to scenic areas mentioned in class, practice problems, answers to lab assignments, and your official grades.

Geoscience Careers
See Geoscience BS requirements in the [Angelo State Catalog](https://example.com). A Geoscience 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!

The [US Department of Labor Occupational Handbook](https://example.com) contains information on geology careers, salaries, education needed, and future job outlook in geology.

GEO, the student organization for all interested in geology, meets Wednesdays at 6:00 pm. The first meeting will be September 5. GEO is a Student Chapter of the [American Association of Petroleum Geologists](https://example.com).
Core Curriculum Objectives and related ASU Student Learning Outcomes

<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 (CT1).</td>
<td>Lab Quiz 1 grade</td>
</tr>
<tr>
<td>2. Develop, interpret, and express ideas through effective visual communication (CS3).</td>
<td>Lab 8 grade</td>
</tr>
<tr>
<td>3. Manipulate and analyze numerical data and arrive at an informed conclusion</td>
<td>Homework Assignment</td>
</tr>
<tr>
<td>4. Manipulate and analyze observable facts and arrive at an informed conclusion</td>
<td>Lab Quiz 2 grade</td>
</tr>
<tr>
<td>5. Work effectively with others to support and accomplish a shared goal.</td>
<td>Lab 7 grade</td>
</tr>
</tbody>
</table>

**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 to 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.

**Student Disability Services**

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

Student Absence for Observance 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. See ASU Operating Policy 10.19 Student Absence for Observance of Religious Holy Day for more information

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.

General Policies Related to This Course
All students are required to follow the policies and procedures presented in these documents:
- Angelo State University Student Handbook
- Angelo State University Catalog