Instructor: Dr. Heather L. Lehto  
Email: Heather.Lehto@angelo.edu  
Office hours: VIN 127, T and R 2-4pm or by appointment

REQUIRED TEXTBOOKS:
- *Earth System History, Fourth Edition* by Steven M. Stanley and John A. Luczai
- *Historical Geology Lab Manual* by Heather L. Lehto

STUDENT LEARNING OUTCOMES

1) Explain what evolution is, including what mechanisms are involved.
2) Describe the current theories of how life might have evolved on Earth, including what experiments have been done to help improve the theory, when life evolved, and what type of organism it was.
3) Explain what the fossil record is and how it can be biased.
4) Explain how the Geologic Time Scale was produced, including how stratigraphic and fossil correlation is used and how the numerical ages were added.
5) Describe the theory of plate tectonics including identifying plate boundaries, describing plate motions at boundaries, and identifying landforms/features associated with each boundary. Describe the early theories that laid the foundation for plate tectonics (continental drift, sea floor spreading).
6) Draw and describe how the several types of organisms lived and changed through time:
7) Explain what sedimentary facies are and how they are used to interpret ancient sedimentary environments.
8) Describe the tectonic changes in North America that occurred throughout time (orogenies, oceans, etc).
9) Explain what a mass extinction is and describe the causes of the major mass extinctions throughout time.

Learning outcomes will be evaluated on exams, lab projects, and an IDEA course evaluation

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>Core Curriculum Student Learning Outcomes</th>
<th>Assessment Method</th>
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</thead>
<tbody>
<tr>
<td>1. Gather, analyze, evaluate, and synthesize information relevant to a question or issue.</td>
<td>Lab Quiz 1</td>
</tr>
<tr>
<td>2. Develop, interpret, and express ideas through effective visual communication.</td>
<td>Lab 3</td>
</tr>
</tbody>
</table>

ATTENDANCE POLICY

You are expected to attend every class meeting. 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. You will find it extremely difficult to pass this class if you do not attend regularly and participate!

COURSE WEBPAGE

Blackboard contains class outlines, web links to scenic areas mentioned in class, practice problems, answers to lab assignments, and your official grades.
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.

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.

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.

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.

GRADING:

- 4 exams (5% each)
- Comprehensive final exam (20%)
- 13 chapter quizzes (1% each, lowest 3 are dropped)
- Lab quizzes (10% each),
- 10 graded lab exercises (3% each)
- Extra Credit Project (+ 0 - 5%), Adding Machine Tape Geologic Time Scale.
- Make-up a single lab or 1 chapter quiz grade by participating on an optional field trip and turning in a brief project report.

EXAMS

There are 4 exams throughout the semester, each covering 3-5 chapters of material. If you have extenuating circumstances that prevent you from taking the test on the scheduled day contact me as soon as possible to schedule a makeup exam.

CHAPTER QUizzes

Chapter quizzes will be given the day we begin a new chapter in class. They will consist of 4-5 questions based on the chapter reading which must be done BEFORE we begin a new chapter. There will be 13 total quizzes given, however the lowest 3 will be dropped. There will be NO makeup quizzes given.
FIELD TRIPS

On field trips you will get a chance to apply concepts discussed in class to describe and interpret outcrops of rocks, fossils, and sediments. We will go on 2 required field trips during lab time (see course schedule for dates). You are responsible for getting to the field trip locations. You will be provided with detailed information before each trip. Contact your lab instructor if you need a ride!

On optional weekend trips we will travel in a university van and most expenses will be covered.

1) Saturday, February 17: Girl Scouts STEM Conference for Middle School and High School young women, various rooms and labs on ASU campus. Some volunteer opportunities on Friday, February 16. Leader: Heather Lehto.

2) Saturday, April 7: Waco Mammoth Quarry National Monument. Leader: Joseph Satterfield.

3) Saturday, April 14: Art and Science Day at the San Angelo Museum of Fine Art. Leader: Heather Lehto.


5) Weeknights to be announced: Elementary School Science Nights. Share fossils, compasses, photos, and maps with interested elementary school students and their parents. Pizza is typically provided.

GEO CLUB

GEO, the student organization of all interested in geology, meets almost every Wednesday @ 6:00PM. 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 related to GEO.

YOU CAN MAJOR OR MINOR IN GEOLOGY @ ASU!

See BS in Geoscience requirements at https://www.angelo.edu/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. Good and rewarding careers exist for geologists, geophysicists, hydrogeologists, secondary science teachers, and petroleum engineers. Talk to Dr. Joe, Dr. Ward, Dr. Last, or Dr. Lehto and also read http://www.bls.gov/ooh/life-physical-and-social-science/print/geoscientists.htm.

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.
<table>
<thead>
<tr>
<th>Week of</th>
<th>Lecture Topic</th>
<th>Reading &amp; Quizzes</th>
<th>Lab Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 15-19</td>
<td>January 15, Holiday Syllabus and KS Minerals</td>
<td>2</td>
<td>No Labs!!</td>
</tr>
<tr>
<td>January 22-26</td>
<td>Minerals and Rocks</td>
<td>5</td>
<td>1: Rock-forming minerals</td>
</tr>
<tr>
<td>January 29 – February 2</td>
<td>Diversity of Life</td>
<td>3</td>
<td>2: Sedimentary rocks</td>
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<tr>
<td>February 5-9</td>
<td>Correlation and Dating of Rocks Exam 1: Ch 2, 3, 5</td>
<td>6</td>
<td>3: Stratigraphic column</td>
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<tr>
<td>February 12-16</td>
<td>Evolution</td>
<td>7</td>
<td>4: Igneous and metamorphic rocks</td>
</tr>
<tr>
<td>February 19-23</td>
<td>Plate Tectonics</td>
<td>8</td>
<td>5: FIELD TRIP 1 - Permian trackways in San Angelo State Park</td>
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<tr>
<td>February 26 – March 2</td>
<td>Mountain Building</td>
<td>9</td>
<td>Review for Lab Quiz 1</td>
</tr>
<tr>
<td>March 5-9</td>
<td>Precambrian Exam 2: Ch 6-9</td>
<td>11, 12</td>
<td>LAB QUIZ 1: Rocks and Minerals</td>
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<tr>
<td>March 12-16</td>
<td>Spring Break</td>
<td></td>
<td>No Labs!!</td>
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<tr>
<td>March 19-23</td>
<td>Early Paleozoic</td>
<td>13</td>
<td>6: Paleogeographic maps</td>
</tr>
<tr>
<td>March 26-30</td>
<td>Middle Paleozoic March 30, Holiday</td>
<td>14</td>
<td>7: Common Texas fossils</td>
</tr>
<tr>
<td>April 2-6</td>
<td>Late Paleozoic</td>
<td>15</td>
<td>8: More Common Texas Fossils</td>
</tr>
<tr>
<td>April 9-13</td>
<td>Mesozoic Exam 3: Ch 11-15</td>
<td>16, 17</td>
<td>9: FIELD TRIP 2: Christoval</td>
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<tr>
<td>April 16-20</td>
<td>Mesozoic Cenozoic</td>
<td>18, 19, 20</td>
<td>10: Paleoenvironments</td>
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<tr>
<td>April 23-27</td>
<td>Cenozoic</td>
<td></td>
<td>Review for Lab Quiz 2</td>
</tr>
<tr>
<td>April 30- May 4</td>
<td>Exam 4: Ch 16-20</td>
<td></td>
<td>LAB QUIZ 2: FOSSILS (Labs 6, 7, 8, and 9)</td>
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<tr>
<td>May 9, 8-10am or 10:30</td>
<td>Final Exam</td>
<td></td>
<td>No labs!!!!</td>
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All information is subject to change.

Note: No Labs!! indicates lab exercises are not scheduled for the specified week.