South Plains College
Course Syllabus
Historical Geology 1404

Instructor Information
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Required Course Materials
Lecture*: **The Earth Through Time, 10th Edition / Harold L. Levin***
Lab: **Notebook of Lecture Notes and Lab Materials**

Purpose Statement
This course is an introduction to the history of the planet earth. Historical Geology presents the events of the last 4.6 billion years, based on rock, fossil, magnetic, isotopic, and other interpretative evidence. The Geologic Timescale is used as an outline of the divisions of time studied in the course. Each theory will be supported with evidence and students will gain a more complete understanding of how the earth has altered over time. The effects on life forms will be reviewed and examined in the fossil record. Additional analysis of paleomagnetic records, dendrochronologic samples, speleothems, and ice cores will allow students to examine the depth and variety of evidence for the changing planet, Earth.

Prerequisites
It is required to take GEOL 1403 prior to GEOL 1404, only with the instructor's permission can a student be admitted without the prerequisite. A background in high school Chemistry and Biology is helpful.

Course Description
Introductory course in geologic history; the composition and structure of the earth, its landforms, and the agencies active in their production are presented. This course is intended for all students interested in the study of the earth. Global examples of all theories and processes will be presented for interpretation and understanding.

1. Classes meet twice a week for lecture and for lab
2. **GEOL 1404 earns 4 credit hours**
3. Students will develop proficiency in the appropriate Intellectual Competencies as follows:
    - **Reading:** The ability to analyze and interpret a variety of printed materials, books, documents and articles – above the 12th grade level.
    - **Writing:** The ability to produce clear, correct and coherent prose adapted to purpose, occasion and audience – above the 12th grade level.
    - **Listening:** The ability to analyze and interpret various forms of spoken communication, possess sufficient literacy skills of writing, reading – above 12th grade level.
    - **Critical Thinking:** The ability to INDIVIDUALLY think and analyze at a critical level.
    - **Computer Literacy:** The ability to understand our technological society, use computer-based technology in communications, solving problems, acquiring information.

Learning Outcomes

Lecture:

1. Demonstrate an understanding of the scientific method.
2. Describe the formation of the universe, solar system, and earth.
3. Explain and define the continental drift hypothesis and plate tectonic theory.
4. Differentiate between the three major rock types.
5. Properly classify different types of sedimentary rocks and structures.
6. Identify the major techniques used by geologists to assess paleoenvironments.
7. Understand and utilize relative and absolute dating principles to sequence events found in the rock record.
8. Recognize the sequence of and interrelationships between major events in the history of the earth, its surface, and its life forms.
9. Explain the basic processes of fossilization methods.
10. Understand geologic time, explain the geologic time scale and its scientific basis.

Laboratory:

1. Demonstrate knowledge of laboratory safety.
2. Gather, organize, calculate, and interpret data.
3. Relate physical observations and measurements to theoretical principles.
4. Conduct basic laboratory assignments with proper laboratory techniques.
5. Effectively communicate scientific ideas with supporting evidence.
6. Identify fossils based on their characteristics and morphology.
7. Correctly interpret geological cross-sections, stratigraphic charts, and geologic maps.
8. Interpret facies descriptions and determine depositional environments.

Course Layout

From Lecture:

1. Depict an Evolving Image of the Earth
    - Sequentially order the geological time periods
    - Define significant events that separate the Geological Time Periods
2. Infer the Age of the Universe
    - Compare cosmological data for the Big Bang Theory
    - Integrate knowledge to the periodic table with element formation
    - Identify other presented theories for Universe formation
3. Illustrate Solar System Formation Stages
4. Differentiate between relative and absolute time
5. Identify and Recall significant events in Geological History
    - Planet formation
    - Crust formation
    - Atmosphere formation
    - Ocean formation
    - Continental formation
    - Continental change (plate tectonics)
    - First single cell life
    - First different life forms (plants, fish, amphibians, reptiles, mammals…)
6. Analyze Seafloor Spreading Evidence
    - Compare data gathered from the Mid-Atlantic Ridge

- Determine whether Seafloor Spreading and Continental Drift theories contradict or support one another

7. Compare Manipulative Models with the Earth's Magnetic Fields
    - Compare crystal formation and orientation to the positive pole of the planet
    - Interpret polar reversals over time
    - Apply this information to our understanding of the Geologic Timescale
8. Analyze Plate tectonics
    - Determine whether Plate Tectonics supports or contradicts theories of Continental Drift and Seafloor Spreading
    - Present explanations of forces that cause Plate Tectonics
    - Distinguish and explain differences in age of continental and oceanic crust
9. Describe Sedimentary Formations
    - Explain sedimentary rock formation
    - Identify sedimentary deposits
    - Discriminate clastic sizes
10. Determine the Architecture of Vulcanic Formations
    - Differentiate between types of volcanoes
    - Compare and contrast positive and negative effects of volcanoes over geologic time
11. Outline Seismic Activity
    - Determine causes of earthquakes and tsunamis
    - Evaluate effects on humanity
    - Describe how humans monitor seismic activity
12. Infer Geological History of a Formation
    - Determine sequence of sedimentary layering
    - Determine relative time sequence of time geologic time indicators.

Course Requirements

1. The student should do each of the following:
    - Read the assigned chapters in the textbook
    - **Attend all lectures and laboratory classes.**
    - Take notes in class.
    - Review notes daily.
    - Compile related current events.
    - **Participate in class discussions.**
    - Complete assigned outside reading material and homework.
    - View audiovisual materials on selected topics.
    - Use the computer software in the lab and/or classroom as it is assigned.
    - Complete the exams on the assigned dates; the exams may include essay questions.

Calendar

The instructor will ensure that the course content is covered in a manner that fulfills the course objectives. Due dates for assignments, quizzes and exams will be provided within a calendar format. All dates will be tentative and subject to change.

Grading Policy

Course grade will be assessed according to the completion of the following using percentages noted:

- Each, Individual Quiz (3 Quizzes) 10%
- Each, Individual Exam (3 Exams) 10%
- Presentation 10%
- Lab Average 10%
- Final 20%

Attendance Policy

ATTENDANCE: School policy on attendance is covered in the current catalog. Roll is kept for **both lecture and lab**. If you are absent **four consecutive class-days**, you may be dropped or if you accumulate five absences and have less than 59% average, you may be dropped. **A drop in the above manner usually results in a grade of F.**

Instructor Initiated Drop

You may be dropped for disruptive or distractive behavior that effects another student's learning. The following are specific examples, but it is up to the discretion of the instructor to determine such behavior. Please, refer to the SPC Student Guide for additional examples. Only one warning will be given for behavior. No warnings will be given for plagiarism or cheating.

- **Attendance Policy**
- **Excessive Class Interruption**
  - In class phone use
  - Disruptive, rude, or crude behavior
- **Academic Integrity**
  - Dishonesty of any kind on examinations or on written assignments, illegal possession of examinations, the use of unauthorized notes during an examination, obtaining information during an examination from the text- book or from the examination paper of another student, assisting others to cheat, alteration of grade records, illegal entry or unauthorized presence in an office are examples of cheating. Complete honesty is required of the student in the presentation of any and all phases of course work. This applies to quizzes of what-ever length, as well as to final examinations, to daily reports and to term papers. ***(Student Code – SPC Student Guide, Pg: 12)***

Outcomes Inventory

A pre and post test may be used to determine the extent of improvement the class has gained during the semester; given at the discretion of the instructor.

Diversity Statement

In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

Disability Statement

Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Special Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodation must provide acceptable documentation of his/her disability to the Special Services Coordinator. For more information, call or visit the Special Services Office in the Student Services building, 894-9611 ext. 2529.