

Lassen Community College Course Outline

GEOL-5 Historical Geology & Paleontology

4.0 Units

I. Catalog Description

This course is designed to provide a descriptive geological history of the earth using the principles and methods of interpretation and reconstruction of the changes that have occurred on the earth in the fossil record. This course has been approved for online and hybrid delivery.

Recommended Preparation: Successful completion of ENGL105 or equivalent multiple measures placement.

Transfers to both UC/CSU
General Education Area: A
CSU GE Area: B1 & B3
IGETC GE Area: 5A & 5C
C-ID GEOL 111
51 Hours Lecture, 51 Hours Lab
Scheduled: Spring

II. Coding Information

Repeatability: Not Repeatable, Take 1 Time
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 191400

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Outline the earth's history through construction of a geological time scale and evolution of organisms.
2. Apply proper lab techniques and knowledge of theoretical concepts in geology to acquire and interpret geologic data and formulate new questions in a laboratory setting.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Explain and practically apply the principles of the scientific method.
2. Discuss earth's origin and evolution.
3. Identify the basic physical features of the earth.
4. Describe how the record of the past is expressed in the sedimentary rocks of the earth.
5. Examine and interpret evidence of geologic activity and the presence of life in the major areas of geologic time.
6. Discuss how the past is the key to the present.
7. Through field trips and laboratory experience, identify basic elements of historical geology and stratigraphy.
8. Read a geological map for interpretive purposes.

9. Identify the major groups of preserved life forms found in the fossil record and become aware of the limitations of the fossil record.
10. Explain the tectonic processes that shape the Earth over geologic time.
11. Demonstrate and apply an understanding of the supercontinent cycle and paleoclimate
12. Practically apply the principles of relative dating to interpret sequences of geologic events
13. Communicate complex course concepts effectively in writings and diagrams

IV. Course Content

- A. Prologue
 1. Beginnings
 2. Background
 3. Concepts and Principles
 - a. Earth's materials
 4. Birth and Development of a Geologic Time Scale
 5. Dating Methods
 - a. Geologic time
 - b. Relative dating
 - c. Absolute dating
 6. The Fossil Record
 - a. Modes of formation
 7. Classification and Use of Fossils
 8. Ancient Sedimentary Environments
 9. Evolutions and Extinction
- B. Plate Tectonics
 - a. Driving mechanisms
 - b. Plate Boundaries
 - c. Hot spots
 - d. Crustal Evolution and Deformation
 - e. Supercontinent cycle
- C. Stratigraphy
 - a. Catastrophism and Uniformitarianism
 - b. Interpretation of sedimentary rock sequences
- D. Paleozoic World
 1. Cryptozoic Life
 2. Eopaleozoic Life
 3. Paleozoic Life, Cambrian to Permian
- E. Mesozoic World
 1. Triassic
 2. Jurassic
 3. Cretaceous
- F. Cenozoic World
 1. Glacial and Pleistocene Geology
 2. Emergence of Man
- G. Recent geologic events
- H. Laboratory
 1. Principles of Historic Geology
 2. Introduction to identifying rocks and minerals

3. Sedimentary Rocks
4. Geologic Maps, Part I
5. Geologic Maps, Part II
6. Fossils
7. Examine methods of fossil preservation
8. Ediacaran Fossils
9. Trilobites, Part I
10. Trilobites, Part II
11. Graptolites
12. Brachiopods
13. Molluscs, Part I
14. Molluscs, Part II
15. Echinoderms
16. Corals
17. Microfossils
18. Vertebrates
19. Plants
20. Interpret geologic cross sections
21. Interpret stratigraphic columns
22. Relative dating and interpreting sequences of geologic events
23. Introduction to absolute dating
24. Paleogeographic reconstruction
25. Practicum

V. Assignments

A. Appropriate Readings

Treatise or Invertebrate Paleontology

B. Appropriate Writing Assignments

Students are expected to write an interpretive analysis of field observations.

C. Expected Outside Assignments

Field trip analysis reports.

D. Specific Assignments that Demonstrate Critical Thinking

Field trip analysis reports.

VI. Methods of Evaluation

Traditional Classroom Evaluation:

- A. Substantial writing assignments consisting of, but not limited to lab reports.
- B. Computational or non-computational problem-solving demonstrations, including field work and lab reports.
- C. Skill demonstrations, including field work.
- D. Objective examinations, including multiple choice, matching items, and essay.

Online Evaluation:

A variety of methods will be used, such as: research papers, asynchronous and synchronous discussions (chat/forum), online quizzes and exams, postings to online website, and email communications.

Hybrid Evaluation:

All quizzes and exams will be administered during the in person class time. Students will be expected to complete online assignments and activities equivalent to in class assignments and activities for the online portion of the course. Electronic communication, both synchronous and asynchronous will be evaluated for participation and to maintain effective communication between instructor and students.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

Traditional Classroom Delivery Correspondence Delivery

Hybrid Delivery

Online Delivery

Traditional Classroom Delivery :

- A. Lecture
- B. Demonstration
- C. Field Trips
- D. Multimedia
- E. Internet

Online Delivery:

Online written lectures. Participation in forum-based discussions. Online exercises/assignments contained on website. Discussion papers, email communications, postings to forums, and web-links will comprise the method of instruction.

Hybrid Delivery:

A combination of traditional classroom and online instruction will be utilized. Each semester 51 lab hours will be taught face-to face by the instructor and 51 lecture hours will be instructed online through the technology platform adopted by the District. Traditional class instruction will consist of lectures, visual aids, and group presentations. Online delivery will consist of exercises/assignments, lecture posts, discussions, adding extra resources and other media sources as appropriate.

VIII. Representative Texts and Supplies

Required:

Levin, *Earth Through Time*, 11th edition, 2017, Wiley, ISBN 9781119228349

Lab Manual: *Historical Geology: Interpretations and Applications*, 6th Edition 2004, Poort and Carlson, ISBN 9780131447868

IX. Discipline/s Assignment

Earth Science

X. Course Status

Current Status: Active

Original Approval Date: 5/21/2001

Revised By: Andy Rupley

Curriculum/Academic Standards Committee Revision Date: 09/14/21