

COURSE SYLLABUS

YEAR COURSE OFFERED: 2015

SEMESTER COURSE OFFERED: Spring

DEPARTMENT: Environmental Science

COURSE NUMBER: 1104

NAME OF COURSE: Historical Geology Lab

NAME OF INSTRUCTOR: staff

The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.

Learning Objectives

This course allows the student to experience a “hands-on” study approach which complements various earth science discussions in historical geology lecture class.

The major learning objectives are:

1. Understand the fundamental concepts, principles, and interactions of Earth’s systems applicable to the Earth History.
2. Apply fundamental understanding of classification and cladistics through the identification and evaluation of fossil evidence.
3. Apply fundamental understanding through the identification and evaluation of sedimentary rocks, plant, and animal fossils.
4. Read and interpret stratigraphic sections and geologic maps and answer questions pertaining to landform evolution.

Core Objectives (CO)

Physical Geology addresses the following core objectives to ensure students develop the essential knowledge and skills they need to be successful in college, in a career, in their communities, and in their lives.

- Critical Thinking Skills(CT) - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- Communication Skills(COM) - to include effective development, interpretation and expression of ideas through written, oral and visual communication
- Empirical and Quantitative Skills (EQS)- to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- Team Work (TW) - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

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Major Assignments/Exams

Working as a group:

Students will be working as a group on many in class activities, such as identification of rocks, analyzing geological maps; perform water flow experiments and others. CO: CT, EQS, COM and TW.

Exams/ quizzes: there will be three in-class exams and 10 quizzes during the semester.

Exams/quizzes will consist of multiple choice, short answer, and essay questions. CO: CT, EQS

Learning Outcomes	CO	Assessment Methods	Criteria/Targets
Analyze the formation, classification and interpretation of sedimentary rocks	CT, COM, EQS, TW	Students will be studying and analyzing the properties of sedimentary rocks as a group in lab and submit a lab report. Students will be tested over several samples of sedimentary rocks.	70% above
Apply stratigraphic principles to interpret the rock record	CT, COM and EQS, TW	Students will be given cross sectional maps to interpret depositional environments. Students will be tested over the interpretation of rock record.	70% above
Apply relative and absolute dating principles to interpret the geologic history of rock units	CT, COM and EQS, TW	Students will be tested over the major differences of geological dating techniques and the major principles of relative and absolute age dating. Students will be given a sequence and to determine the relative age of geological events.	70% above
Explain evolutionary theory and relate it to changes in the fossil record through time.	CT, COM and EQS, TW	Students will study and describe fossils during different geological time. Students will be tested over the identification of fossils and interpret the history of rock units.	70% above

Required Reading

Recommended Reading

List of discussion/lecture topics

Minerals & Rocks; The Rock Cycle
Modern Tectonic Environments
Paleogeography & Paleotectonics
Relative & Absolute Age Dating
The Geologic Time Scale

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Stratigraphy & Depositional Environments
Interpreting Geologic History from Geologic Maps
Tentative Field Expedition & Strat Project at Red Rock Canyon
Introduction to Cladistics
Marine Invertebrate Cladistics
Dinosaur Cladistics
Dinosaur Locomotion
Human Evolution