

COURSE OUTLINE

GEOL-109 **Historical Geology** 4 Semester Hours

HOWARD COMMUNITY COLLEGE

Description

This is a course in which the principles of physical geology and stratigraphy are used to study the history of the earth and its inhabitants. The formations and geologic periods of North America will be emphasized. In the lab, the student will become familiar with fossils, rocks, minerals and the use of maps in geologic interpretations. There will be several field trips to local sites. (3 hours lecture, 3 hours lab)

Overall Course Objectives

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

1. Identify a rock hand-sample as either igneous, sedimentary, or metamorphic.
2. Distinguish sedimentary rock samples as to origin based on their physical characteristics (clastic, organic or chemical).
3. Distinguish sedimentary rock samples under the microscope as to their origin based on their physical characteristics.
4. Describe how various sedimentary rocks form under differing environmental conditions.
5. Determine the paleoenvironmental conditions indicated in a hand-sample of a sedimentary rock.
6. Relate tectonic settings to the formation of sedimentary rock types.
7. Relate sedimentary data from sea-floor cores to support Plate Tectonic Theory.
8. Describe the interrelationship between plate tectonics and the evolution of various species of life.
9. Identify major fossil types as to marine or terrestrial.
10. Recreate the Geologic Time Scale indicating major evolutionary events together with approximate dates and period names.
11. Identify what a fossil is and the conditions necessary for the formation of a fossil.
12. Describe the classification of fossils through the application of taxonomy.
13. Interpret geologic maps in order to determine past environments and processes leading to the present.
14. Use index fossils to arrange rock outcrops in proper sequence.
15. Correlate fossil evidence to periods of time and environments.
16. Recreate the sequence of events for a given locale based on the evidence indicated in the rock record.

Major Topics

- I. Introduction: Time: What it is; How it is Detected/Measured
 - A. Times Arrow/Times Cycle
 - B. Relative Time
 - C. Absolute Time
- II. Plate Tectonics: Shifting Environments
 - A. Historical Background
 - B. Evidence Above/Below the Earth's Surface
 - C. Active Continental Margins
 - D. Passive Continental Margins
- III. Classification: Six Kingdoms of Nature
 - A. Biotic Kingdoms
 - B. Mineral Kingdom
- IV. Records In The Rock: The Present is the Key to the Past
 - A. Classification of Sedimentary Rocks
 - B. Organization of the Rock Record
 - C. Paleosedimentary Environments
 - D. Earth's Origins and Evolution of Life
- V. Eras: Major Slices of Time
 - A. Precambrian
 - B. Paleozoic
 - C. Mesozoic
 - D. Cenozoic
- VI. Pleistocene Epoch: The Ice Ages and Mankind

Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member but will be calculated on the basis of field trip reports, laboratory reports, quizzes, lab practical, exams and a final exam.

Writing: Individual written lab reports.

Other Course Information

This course is a Science elective and an Arts and Sciences elective.