

# **COURSE OUTLINE**

**GEOL-108**

**Historical Geology**

**3 Credits**

**Science Core Course**

## **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. Geologic features such as rocks and fossils are used to interpret and date past events. The formations and geologic periods of North America will be emphasized. (3 hours lecture)

### **Statement on General Education and Liberal Learning**

A liberal education prepares students to lead ethical, productive, and creative lives and to understand how the pursuit of lifelong learning and critical thinking fosters good citizenship. General education courses form the core of a liberal education within the higher education curriculum and provide a coherent intellectual experience for all students by introducing the fundamental concepts and methods of inquiry in the areas of mathematics, the physical and natural sciences, the social sciences, the arts and the humanities, and composition. This course is part of the general education core experience at Howard Community College.

### **Overall Course Objectives**

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

1. Differentiate common rocks and minerals by their physical properties.
2. Interpret the depositional environments of sediments and sedimentary rocks.
3. Distinguish how various sedimentary structures form under differing environmental conditions.
4. Illustrate the principles of relative and absolute dating.
5. Apply concepts and techniques of isotopic dating to determine the numerical age of rocks and geologic events.
6. Evaluate the global geologic evidence for Plate Tectonic Theory.
7. Relate tectonic settings to the formation of sedimentary rock types.
8. Examine sedimentary data from sea-floor cores of all oceans to support Plate Tectonic Theory.
9. Propose interrelationships between plate tectonics and the evolution of various species of life.
10. Compare basic fossil types and the conditions necessary for the formation of a fossil.
11. Construct the Geologic Time Scale indicating major evolutionary events together with approximate dates and period names.
12. Outline the major geologic and climatic change events throughout earth's history.

13. Discuss evolutionary theory.
14. Describe the changes in the fossil record over time including the dominate flora and fauna for each period of the Earth's history.
15. Classify fossils through the application of taxonomy.
16. Discuss the major worldwide extinction events in the Earth's history.
17. Apply stratigraphic principles to the interpretation of the rock record.
18. Working in cooperative groups, recreate the sequence of events for a given national or international locale based on the evidence indicated in the rock record.
19. Recognize the vastness of geologic time required for organic evolution and recognize the uniqueness of Earth's environment that resulted in the development of life on Earth.

### **Major Topics**

- I. Records In The Rock: The Present is the Key to the Past
  - A. The Rock Cycle
  - B. Classification of Sedimentary Rocks
  - C. Major Chemical Cycles
  - D. Paleosedimentary Environments
  - E. Earth's Origins and Evolution of Life
- II. Time: What it is; How it is Detected/Measured
  - A. Relative Time
  - B. Absolute Time
- III. Plate Tectonics: Shifting Environments
  - A. Historical Background
  - B. Evidence Above/Below the Earth's Surface
  - C. Active Continental Margins
  - D. Passive Continental Margins
- IV. Classification: Six Biotic Kingdoms of Nature
  - A. Taxonomy
  - B. Preservation
- 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 homework and classwork assignments, quizzes, exams and a final exam.

### **Other Course Information**

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