

COURSE OUTLINE
GEOL-117
Introduction to Physical Geology Lab
1 Credit
Science Core Course

HOWARD COMMUNITY COLLEGE

Description

In this course, students will utilize the basic materials and tools of physical geology to identify common minerals and rocks. Students will learn to recognize surface erosional and depositional features on aerial photographs and topographic maps, and will interpret geologic faults and structures on geologic maps and models. There will be several field trips to local sites. Pre- or co-requisite: GEOL-107. (3 hours lab)

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. Working in cooperative groups, perform simple physical and chemical tests to identify common minerals.
2. Identify hand samples of igneous rocks by their mineralogy and texture, and relate these rocks to magma composition, cooling rates, and their position on Bowen's Reaction Series.
3. Explain the distribution of basaltic, andesitic and rhyolitic volcanoes throughout the world and their relationship to plate tectonics.
4. Using hands-on analysis techniques, identify hand samples of sedimentary rocks by their texture and mineralogy and relate these rocks to their environment of deposition.
5. Define what is and is not a fossil and identify common global index fossils for specific geologic eras.
6. Describe the process of metamorphism and identify hand samples of metamorphic rocks by their mineralogy and foliation.
7. Identify rocks and fossils found in the five geologic provinces of Maryland.

8. Locate features on a topographic map by latitude and longitude.
9. Contour a topographic map and construct a topographic profile.
10. Identify major landform features throughout the world on topographic maps and aerial photos, and relate them to basic geologic processes of stream, groundwater, glacial, or marine erosion and deposition.
11. Interpret geologic maps and geologic cross-sections.
12. Construct block diagrams and models illustrating the basic types of faults, unconformities, and structural folds.

Major Topics

- I. Minerals: The Materials of Earth
- II. Volcanism and Igneous Rocks
- III. Sedimentary Rocks
- IV. Metamorphic Rocks
- V. Geologic Time and Fossils
- VI. The Geology of Maryland
- VII. Interpreting a Topographic Map
- VIII. Streams
- IX. Groundwater
- X. Deserts
- XI. Glaciers
- XII. Waves, Beaches, and Coasts
- XIII. Geologic Structures and Geologic Maps

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, lab reports, quizzes, exams, lab practicals, and a final exam.

Writing: Individual written lab reports.

Other Course Information

This course, together with GEOL-107, is a science core course. This course is a science elective and an Arts and Sciences elective.