

COURSE OUTLINE
BIOL-115
Environmental Science Laboratory
1 Credit
Science Core Course

HOWARD COMMUNITY COLLEGE

Description

In BIOL-115, students will investigate the interactions among populations and their environment using field techniques for analyzing water quality, soil formation and erosion, stream ecology, species diversity, intra and interspecific competition, and estimation of population size. Students will experience first hand environmental management problems on field trips to a waste water management site, a solid waste management site, and a recycling site. Pre- or Co-requisite: BIOL-105. (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. Prepare and analyze microscope slides of organisms from aquatic and terrestrial habitats.
2. Identify organisms using taxonomic keys.
3. Collect and analyze water samples from lotic and/or lentic systems for pH, temperature, DO, nitrogen, phosphate, hardness, and species diversity.
4. Collect and analyze soil samples for pH, temperature, composition, moisture content, and species diversity.
5. Compare differences in aquatic systems that have been destroyed due to acid rain to those that have not.
6. Interpret differences between an old field and a temperate deciduous forest in terms of numbers of small plants, intermediate plants, large plants and the dominant vegetation.
7. Interpret and analyze laboratory and field data in order to reach logical conclusions.
8. Describe the process of solid and hazardous waste management.
9. Describe the process of waste water management.
10. Describe the importance of conservation through recycling.

Major Topics

- I. Field Collection Techniques
- II. Use of the Microscope
- III. Identification of Organisms using Taxonomic Keys
- IV. Stream Ecology - Field Techniques
- V. Stream Quality Assessment
- VI. Successional Changes in Vegetation - Field Trip for Data Collection
- VII. Lab Analysis of Successional Changes in Vegetation
- VIII. Intraspecific and Interspecific Competition - Field Trip for Data Collection
- IX. Lab Analysis of Intraspecific and Interspecific Competition
- X. Waste Water Management - Field Trip
- XI. Acid Rain Pollution
- XII. Solid Waste Management - Field Trip
- XIII. Ecological Stress and Species Diversity
- XIV. Recycling Site - Field Trip

Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member but will include the following:

Final grades will be calculated on the basis of lab attendance and techniques, lab quizzes and lab book.

Other Course Information

This course, together with BIOL-105, is a Science core course. This course is a Science elective and an Arts and Sciences elective.