

COURSE OUTLINE

BFMT-200
Bioinformatics
3 Credits

HOWARD COMMUNITY COLLEGE

Description

Bioinformatics is the science of storing, extracting, organizing, analyzing, interpreting, and utilizing biological information. This course provides an introduction to bioinformatics, the combined field of biology and informatics (information science and technology). This course integrates biological concepts with computer and database methods to study biological systems. The Associate of Arts Informatics Degree program prepares students for undergraduate schools or a career in the fast-paced pharmaceutical or biotechnology industries.

Prerequisite: BIOL-101. (4 hours weekly)

Overall Course Objectives

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

1. Compute the optimal alignment between two or more DNA sequences.
2. Retrieve protein and DNA sequences from databases.
3. Perform database homology search.
4. Search databases and genomes for RNA sequences.
5. Complete RNA analysis over the Internet.
6. Locate phylogenetic tree resources on the Internet.
7. Combine theory and practice to solve research problems.

Major Topics

- I. What is bioinformatics? History of Bioinformatics
- II. Biological databases and data models
- III. Sequence alignment and searching: BLAST
- IV. Bioinformatics standards, programming, and open source developments
- V. Current topics in bioinformatics: Microarray analysis
- VI. Current topics in bioinformatics and future directions

Course Requirements

Grading and exams: Grading procedures will be determined by the individual faculty member, but will include the final grades calculated on the bases of exams, class projects, lab demonstrations, and written papers.

Other Course Information

This course serves as a requirement in the Bioinformatics program and as a Computer Science elective and a Science elective.