Bioinformatics (BINF)

Search BINF Courses using FocusSearch (http://catalog.northeastern.edu/class-search/?subject=BINF)

BINF 5964. Projects for Professionals. (0 Hours)
Offers students an applied project setting in which to apply their curricular learning. Working with a sponsor, students refine an applied research topic, perform research, develop recommendations that are shared with a partner sponsor, and create a plan for implementing their recommendations. Seeks to benefit students with a curriculum that supports the development of key business communication skills, project and client management skills, and frameworks for business analysis. Offers students an opportunity to learn from sponsor feedback, review 'lessons learned,' and incorporate suggestions from this review to improve and further develop their career development and professional plan. May be repeated twice.

BINF 5976. Directed Study. (1-4 Hours)
Offers independent work under the direction of members of the department on a chosen topic. Course content depends on instructor. May be repeated twice.

BINF 6200. Bioinformatics Programming. (4 Hours)
Focuses on the fundamental programming skills required in the bioinformatics industry. Focuses on Python and R as the main programming language used. Topics include string operations, file manipulation, regular expressions, object-oriented programming, data structures, testing, program design, and implementation. Includes substantial out-of-classroom assignments.

BINF 6201. Introduction to Bioinformatics Using RNA Sequencing. (4 Hours)
Introduces RNA-Seq, a commonly used method for analyzing gene expression. Offers students an opportunity to obtain hands-on experience processing and analyzing high-throughput sequencing data, as well as exposure to NGS and RNA-Seq processes, applications, and terminology.

BINF 6308. Bioinformatics Computational Methods 1. (4 Hours)
Offers the first semester of a two-semester sequence on the use of computers in bioinformatics research. Offers students an opportunity to work with current methods and computational algorithms used in contemporary sequence analysis. Teaches practical skills necessary to manage and mine the vast biological information being generated and housed in public databases. Emphasizes the use of Python as the primary computer language and requires students to learn and understand basic computer logic and syntax, including an introduction to scalars, arrays, hashes, decision statements, loops, subroutines, references, and regular expressions. A focus on fundamental skills, including the command line interface found in the Linux operating system, is designed to prepare students for second-semester applications.

BINF 6309. Bioinformatics Computational Methods 2. (4 Hours)
Designed to build upon the core topics covered in BINF 6308, i.e., use of the computer as a tool for bioinformatics research. Builds upon the Python language fundamentals covered during the first semester but requires students to apply these fundamentals to a semester-long project. The project includes protein family analysis, multiple sequence analysis, phylogeny, and protein structure analysis. Additionally, students have an opportunity to learn to build, load, connect, and query custom MySQL databases, and parse command line flags.

Prerequisite(s): BINF 6308 with a minimum grade of C- or BINF 6308 with a minimum grade of C- or BIOL 6308 with a minimum grade of C-

BINF 6400. Genomics in Bioinformatics. (4 Hours)
Introduces the field of genomics. With the completion of the Human Genome Project several years ago, there has been an explosion of genetic data collected. Focuses on the bioinformatics tools necessary to analyze large-scale genomic data. Covers topics such as phylogenetic trees, molecular evolution, gene expression profiling, heterogeneous genomic data, as well as next-generation sequencing (NGS) data.

BINF 6410. Proteomics in Bioinformatics. (4 Hours)
Introduces protein mass spectrometry and the state-of-the-art instrumentation used today. Proteomics data has become an integral part of the biopharmaceutical characterization and approval process. Topics include the current bioinformatic tools used to analyze raw data, protein identification, posttranslational modifications, targeted proteomics, and quantitative proteomics. Covers freely available bioinformatics tools, such as NCBI, UniProt, and ExPASy.

BINF 6420. Omics in Bioinformatics. (4 Hours)
Focuses on some of the omics, other than genomics and proteomics, in relation to the bioinformatic tools that exist to analyze data. Provides a brief background on each field of study and then focuses on the current bioinformatics tools used. Topics include transcriptomics (transcription and gene expression), metabolomics (metabolism), glycomics (carbohydrates), lipomics (lipids), and phenomics (phenotypic data). Does not cover genomics and proteomics.

BINF 6500. Professional Development for Co-op. (0 Hours)
Introduces the cooperative education program. Offers students an opportunity to develop job-search and career-management skills; to assess their workplace skills, interests, and values and to discuss how they impact personal career choices; to prepare a professional resumé; and to learn proper interviewing techniques. Explores career paths, choices, professional behaviors, work culture, and career decision making.

BINF 6954. Co-op Work Experience - Half-Time. (0 Hours)
Provides eligible students with an opportunity for work experience. May be repeated without limit.

BINF 6964. Co-op Work Experience. (0 Hours)
Provides eligible students with an opportunity for work experience. May be repeated without limit.

BINF 6965. Co-op Work Experience Abroad. (0 Hours)
Offers eligible students an opportunity for work experience abroad. May be repeated without limit.

BINF 7385. Bioinformatics Seminar. (2 Hours)
Discusses current issues and research topics in bioinformatics. Requires student presentations. May be repeated without limit.