

BIOINFORMATICS, GENOMICS, AND PROTEOMICS (DIV III)

Advisory Committee: Professors: D. AALBERTS, D. BAILEY, L. BANTA, R. DE VEAUX, J. EDWARDS, A. GEHRING, L. KAPLAN, C. LOVETT, D. LYNCH, M. MORALES, R. SAVAGE, S. SWOAP, C. TING. Associate Professors: B. KLINGENBERG. Assistant Professors: J. BLAIR, S. ENGEL, L. MAROJA, R. TAUROG. Senior Lecturer: D. C. SMITH. Lecturer: M. MARVIN.

Bioinformatics, genomics, and proteomics are rapidly advancing fields that integrate the tools and knowledge from biology, chemistry, computer science, mathematics, physics, and statistics in research at the intersection of the biological and informational sciences. Inspired by the enormous amount of biological data that are being generated from the sequencing of genomes, these new fields will help us pose and answer biological questions that have long been considered too complex to address. Research in genomics, proteomics, and bioinformatics will also significantly impact society affecting medicine, culture, economics, and politics.

The Bioinformatics, Genomics, and Proteomics curriculum involves faculty from the biology, chemistry, computer science, mathematics/statistics, and physics departments and was designed to provide students with an understanding of these revolutionary new areas of investigation. The introductory level courses, Computation and biology and Statistics for Biologists are accessible to all students interested in gaining familiarity with the power of genomic analysis. Students interested in graduate work in bioinformatics, genomics, and proteomics should take the core courses and five of the recommended courses. Interested students are also encouraged to participate in independent research with members of the advisory faculty as they explore the development of these new fields.

Core Course

BIOL 319/MATH 319/CHEM 319/PHYS 319/CSCI 319 Integrative Bioinformatics, Genomics, and Proteomics Lab

Recommended Courses (in addition to the core course):

BIOL 202 Genetics
BIOL 305 Evolution
BIOL 430 Genome Sciences: At the Cutting Edge
CSCI 134 Introduction to Computer Science
CSCI 136 Data Structures and Advanced Programming
CSCI 256 Algorithm Design and Analysis
PHYS 315/CSCI 315 Computational Biology
STAT 101 Elementary Statistics and Data Analysis
STAT 201 Statistics and Data Analysis

Related Courses

BIMO 321/BIOL 321/CHEM 321 Biochemistry I: Structure and Function of Biological Molecules
BIMO 322/BIOL 322/CHEM 322 Biochemistry II: Metabolism
MATH 337 Phylogenetics
PHYS 302 Stat Mechanics & Thermodynamics
STAT 231 Statistical Design of Experiments