

Courses Approved to meet the requirement for Bioinformatics

Fall Courses:

GEN 322: Introduction to Bioinformatics and Computational Biology

(Cross-listed with BC BIO, BIOL). (3-0) Cr. 3. Fall

Prereq: [BIOL 212](#)

Genome sequencing, assembly, structural and functional annotation, and comparative genomics. Investigating these topics will develop skills in programming and scripting (Perl and/or Python), the use of biological databases, sequence alignment, similarity search, identification of sequence patterns, construction of phylogenetic trees, and comparative genomics.

GEN 444: Bioinformatic Analysis

(Cross-listed with BCB, BC BIO, BIOL, COM S, CPR E). (4-0) Cr. 4. Fall

Prereq: [MATH 165](#) or [STAT 401](#) or equivalent.

Broad overview of bioinformatics with a significant problem-solving component, including hands-on practice using computational tools to solve a variety of biological problems. Topics include: bioinformatic data processing, Perl programming, genome assembly, database search, sequence alignment, gene prediction, next-generation sequencing, comparative and functional genomics, and systems biology.

Spring Courses:

GEN 349: The Genome Perspective in Biology

(Cross-listed with BIOL). (2-2) Cr. 3. Spring

Prereq: [GEN 313](#) or [GEN 320](#)

Analysis of genome, RNA, and protein data using computer technology to answer biological questions on topics ranging from microbial diversity to human health. An introduction for students in the life sciences to the fields of genomics, bioinformatics and systems.

BC BIO 402: Fundamentals of Systems Biology and Network Science

(3-0) Cr. 3. Spring

Prereq: [BIOL 212](#)

Technologies: transcriptome, proteome, metabolome; Networks: Gene regulatory network, Protein-protein interaction network, Literature network; Theories: Graph theory, random network, scale-free network, evolving network, network robustness; Tools: Jmol, MeV, Cytoscape, Citespace.