BIOINFORMATICS AND COMPUTATIONAL BIOLOGY (BCB)

BCB 5000 - Introduction to Computer Programming for Life Sciences
Credit(s): 3 Credits
An accelerated introduction to programming, covering control structures, functions, and classes, as well as data structures including stacks, queues, linked lists, priority queues, dictionaries, trees, and binary search trees. When possible, programming projects will draw upon motivation from biological problems. Offered every Fall.
Restrictions:
Enrollment limited to students in the MS Bioinformatics Comp Biol program.

BCB 5200 - Introduction Bioinformatics I
Credit(s): 3 Credits
The course focuses on the study of nucleotide and peptide sequences and structures from a computational perspective. Topics including sequence alignment, detecting and understanding mutations, gene identification, and structural comparison and prediction. Student should have taken Cellular Biochemistry and Molecular (BIOL-3020) and Data Structures (CSCI-2100) or equivalent. (Offered every Fall)
Restrictions:
Enrollment is limited to students with a major in Bioinformatics Comp Biol.

Attributes: CS Grad-Advanced Applications

BCB 5250 - Introduction Bioinformatics II
Credit(s): 3 Credits
This course focuses on the study of interaction and evolution of biological sequences and structures. Topics include interaction networks, clustering, phylogenic trees and how biological systems change at the genomic. Offered every Spring.
Restrictions:
Enrollment limited to students in the programs.

Attributes: CS Grad-Advanced Applications

BCB 5300 - Algorithms in Computational Biology
Credit(s): 3 Credits
This course introduces the foundations of algorithmic techniques and analysis, as motivated by biological problems. Topics include dynamic programming, tree and graph algorithms, sequence analysis, hidden Markov models. Motivations include sequence alignment, motif finding, gene prediction, and phylogeny.
Prerequisite(s): BCB 5200; BCB 5250
Restrictions:
Enrollment is limited to students with a major in Bioinformatics Comp Biol.

BCB 5350 - Machine Learning in Bioinformatics
Credit(s): 3 Credits
An application of machine learning techniques to solve problems arising in bioinformatics. Unsupervised and supervised learning, clustering, hidden Markov models, and neural networks will be introduced and applied to study biological sequences, structure prediction and gene expression. (Offered occasionally)

BCB 5810 - Bioinformatics Colloquium
Credit(s): 0-1 Credits (Repeatable for credit)
The course provides students with current information about studies in bioinformatics and computational biology through presentations given by faculty members, students, and invited speakers. Students who enroll for credit must present a 20-30 minute talk as part of the seminar, demonstrating their oral communication skills while presenting technical content. Students must have graduate status or receive permission of the CAS Associate Dean for Grad Ed and the instructor to enroll for credit. Offered fall and spring.
Restrictions:
Enrollment is limited to students with a major in Bioinformatics Comp Biol.

BCB 5910 - Bioinformatics Internship
Credit(s): 1-3 Credits (Repeatable for credit)
Internships will include experiences in research and development laboratories of local biotechnology companies, as well as in research laboratories in SLU's departments of Biology, Chemistry, Computer Science, and Mathematics or departments in the School of Medicine. Students must have graduate status in any of the following programs: Bioinformatics and Computational Biology, Biology, Computer Science, Math, Chemistry or in departments in the School of Medicine. (Offered every Spring and Summer)
Prerequisite(s): BCB 5200; BCB 5250
Restrictions:
Enrollment limited to students in the MS Bioinformatics Comp Biol program.

Enrollment limited to students in the Math Stats/Computer Science department.

BCB 5930 - Special Topics
Credit(s): 1-3 Credits (Repeatable up to 12 credits)
Restrictions:
Enrollment limited to students in the programs.

BCB 5970 - Research Topics
Credit(s): 1-3 Credits (Repeatable for credit)
This course will provide research experiences in SLU's departments of Biology, Chemistry, Computer Science, and Mathematics or departments in the School of Medicine. Offered each semester.
Restrictions:
Enrollment limited to students in the MS Bioinformatics Comp Biol program.

Enrollment limited to students in the Math Stats/Computer Science department.

BCB 5980 - Graduate Reading Course
Credit(s): 1-3 Credits