COMPUTATIONAL BIOSCIENCE (CPBS)

CPBS 7001 - Computer Science for Biologists (5 Credits)
This course is an introduction to the fundamental concepts of computer science, the central ideas of computing, and the practices of computational thinking; designed for the basic science PhD programs. It will engage students in activities that allow them to competently apply CS tools to their field.
Grading Basis: Letter Grade
A-GRAD Restricted to graduate students only.
Typically Offered: Spring.

CPBS 7605 - Ethics in Bioinformatics (1 Credit)
Discussions of professional conduct, social implications of research and questions raised by biomedical research, with an emphasis on topics relevant to computational biologists. Active student participation is required. Offered every other year.
Grading Basis: Letter Grade
Typically Offered: Fall, Spring.

CPBS 7615 - Research in Computational Bioscience (1-5 Credits)
Research work in Computational Bioscience. Prereq: Consent of instructor.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 5.
A-GRAD Restricted to graduate students only.
Typically Offered: Fall, Spring, Summer.

CPBS 7650 - Advanced Genome Analysis (2 Credits)
Introduction to genomics emphasizing gaining familiarity with: analysis, utilization of genomic data. Topics: sequencing, mapping genomes, transcriptomics, human genome, evolution, genomic disorders, bioinformatics, statistics, population variation, epigenomics, proteomics, metagenomics, microbiome analysis, functional genomics, ethics.
Crosslisted Course: HMG 7620, STBB 7620, and MICB 7620
Grading Basis: Letter Grade
Typically Offered: Fall, Spring.

CPBS 7659 - Statistical Methods in Genomics (3 Credits)
This course is designed to give an introduction to statistical methods in genetic association studies. Topics include population genetics topics relevant to genetic association studies, design strategies, and analysis methods for case-control and family data. Prereq: BIOS 6612 or permission of instructor. Crosslisted Course: BIOS 6659.
Grading Basis: Letter Grade
Typically Offered: Fall.

CPBS 7660 - Analysis of Genomics Data Using R and Bioconductor (2 Credits)
This course provides students with hands on experience in solving real life biological problems using the statistical software R and Bioconductor. Students will work and communicate with participating researchers and clinicians on their case studies of genomics data. Pre/Corequisite BIOS 6602 or 6612, or consent of instructor.
Grading Basis: Letter Grade
Typically Offered: Fall, Spring, Summer.

CPBS 7671 - Methods and Tools in Biomedical Informatics (4 Credits)
An introduction to the theory and practice of bioinformatics and computational biology. Topics include: the analysis of macromolecular sequences, structures, gene expression arrays, proteomics, and management of the biological literature. Prerequisites: Permission of instructor. Crosslisted: PHCL 7611 (non-sponsor).
Grading Basis: Letter Grade
A-GRAD Restricted to graduate students only.
Typically Offered: Fall.

CPBS 7672 - Research Methods in Biomedical Informatics (4 Credits)
The CPBS faculty members will present lectures on the research currently being conducted in their laboratories. Students will plan, execute and report on their own research project. This course is beginning transition from well-educated students to independent researchers. Prerequisites: Permission of Instructor. Crosslisted: PHCL 7612 (non-sponsor).
Grading Basis: Letter Grade
A-GRAD Restricted to graduate students only.
Typically Offered: Spring.
CPBS 7785 - Independent Study in Computational Bioscience (1-3 Credits)
This course is listed for the benefit of the advanced student who desires to pursue one or more topics in considerable depth. Supervision by a full-time faculty member is necessary. Prerequisite: Permission of Instructor.
Grading Basis: Letter Grade
Repeatable. Max Credits: 3.
A-GRAD Restricted to graduate students only.
Typically Offered: Fall, Spring, Summer.

CPBS 7791 - Readings in Computational Bioscience (1 Credit)
A seminar course in which students read and present recent publications from the primary computational bioscience literature. Prereq: Consent of instructor.
Grading Basis: Letter Grade
Repeatable. Max Credits: 1.
A-GRAD Restricted to graduate students only.
Typically Offered: Fall, Spring, Summer.

CPBS 7792 - Special Topics in Computational Bioscience (1-3 Credits)
Topic varies by semester. Designed to give students a chance to evaluate critically some practical or theoretical problem under faculty supervision and to present results of their thinking to fellow students and instructors for critical evaluation. Prerequisites: Permission of Instructor.
Grading Basis: Letter Grade
Repeatable. Max Credits: 3.
A-GRAD Restricted to graduate students only.
Typically Offered: Fall, Spring, Summer.

CPBS 8990 - Doctoral Thesis (1-10 Credits)
Doctoral Thesis work in Computational Bioscience. Prerequisites: Permission of instructor.
Grading Basis: Letter Grade with IP
Repeatable. Max Credits: 10.
A-GRAD Restricted to graduate students only.
Additional Information: Report as Full Time.
Typically Offered: Fall, Spring, Summer.