

Computational Biology Major

www.biology.pitt.edu

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Computational biology is a growing field of study in the life sciences. This major trains students in computer programming, laboratory techniques, and other skills they will need to succeed in graduate school and in the workforce. This program is administered by the Department of Biological Sciences in the Dietrich School and the Department of Computer Science in the School of Computing and Information.

Requirements for the Computational Biology major

Biological Science courses

BIOSC 0150 Foundations of Biology 1
BIOSC 0160 Foundations of Biology 2
BIOSC 0350 Genetics
BIOSC 1000 Biochemistry*

*Note: Students may alternately choose BIOSC 1810 (Macromolecular Structure and Function) **and** BIOSC 1820 (Metabolic Pathways) in lieu of BIOSC 1000. In this case, BIOSC 1820 becomes the elective course.

BIOSC 1630 meets this requirement.

Computer Science courses

CS 0011 Introduction to Computing for Scientists%
CMPINF 0401 Intermediate Programming
CS 0441 Discrete Structures
CS 0445 Algorithms Data Structures 1
CS 1501 Algorithm Data Structures 2
CS 1656 Introduction to Data Science

%Note: or equivalent or placement assessment exemption

Computational Biology courses

BIOSC 1540 Computational Biology
BIOSC 1542 Computational Genomics **OR** BIOSC 1544 Simulation and Modeling
BIOSC 1630 Computational Biology Seminar
BIOSC 1640 Computational Biology Research Course **OR** CS 1640 Bioinformatics Software Design

Elective courses; 3 credits

Students must complete at least three credits in elective courses by choosing from the following list.

BIOSC 0351 Genetics Lab
BIOSC 0370 Ecology
BIOSC 1005 Introduction to Biochemistry Lab
BIOSC 1130 Evolution
BIOSC 1285 Genomics Lab
BIOSC 1320 Population Biology
BIOSC 1500 Cell Biology
BIOSC 1520 Developmental Biology
BIOSC 1545 Mathematics of Biology
BIOSC 1760 Immunology
BIOSC 1820 Metabolic Pathways and Regulation (with 1810) *
BIOSC 1850 Microbiology

BIOSC 1940 Molecular Biology
CHEM 0250 Analytical Chemistry
CHEM 0320 Organic Chemistry 2
CHEM 1460 Introduction to Modern Computational Science
CHEM 1830 Synthetic Biology
CS 1502 Formal Methods in Computer Science
CS 1520 Programming Languages for Web Applications
CS 1555 Database Management Systems
CS 1566 Introduction to Computer Graphics
CS 1675 Introduction to Machine Learning
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Grade requirements

BIOSC/CS courses: All courses offered by Biological Sciences and Computer Science plus the elective course must be completed with a letter grade of C or better.

Co-requisite courses:

grade in another co-requisite course so that the co-requisite GPA is 2.0 or higher.

