MINOR IN BIOINFORMATICS

At the intersection of biology and computer science, bioinformatics is the study of applying computational tools to collect and analyze complex biological data such as genomic sequences.

A minor in Bioinformatics will give students interested in biology a foundation in programming that will complement their biology backgrounds. In addition to programming, students will take basic courses in statistics and machine learning, leading up to coursework in bioinformatics.

Please contact a department advisor for more information.

Learning Objectives

Students successfully completing this program will be able to:

1. Retrieve and use genomics and protein data.
2. Perform computational analysis of biological data using existing software, informed by an algorithmic understanding of those tools.
3. Write custom programs to complement existing software.
4. Use bioinformatics databases and resources such as the National Center for Biotechnology Information (NCBI) and Uniprot.

Requirements Effective Fall 2023

Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.

Additional coursework may be required due to prerequisites.

A minimum grade of a C (2.000) is required in all courses required for the minor.

Code	Title	Credits
BZ 360	Bioinformatics and Genomics	4
CS 220	Discrete Structures and the Applications	4
CS 345	Machine Learning Foundations and Practice	3
CS 425	Introduction to Bioinformatics Algorithms	4
Select one course from the following:		4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	
MATH 156	Mathematics for Computational Science I (GT-MA1)	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	
Select one course from the following:		2-3
CS 150B	Culture and Coding: Python (GT-AH3)	
CS 152	Python for STEM	
Select one course from the following:		3-4
BZ 110	Principles of Animal Biology (GT-SC2)	
BZ 120	Principles of Plant Biology (GT-SC1)	
LIFE 102	Attributes of Living Systems (GT-SC1)	
Select one course from the following:		2-4
CS 163	CS1---No Prior Programming Experience	
CS 164	CS1--Computational Thinking with Java	
DSCI 235	Data Wrangling	
Select one course from the following:		3
STAT 301	Introduction to Applied Statistical Methods	
STAT 303/ ECE 303	Introduction to Communications Principles	
STAT 307	Introduction to Biostatistics	
STAT 315	Intro to Theory and Practice of Statistics	
Program Total Credits:		**29-33**