Minor in Bioinformatics and Computational Biology (BCB)

Students pursing the Bioinformatics and Computational Biology minor need to acquire some familiarity with the three fields that form the basis of this interdisciplinary area: biology, mathematics, and computer science. They should also take at least one interdisciplinary course that uses quantitative methods to pose and answer biological problems. Students should be careful to choose their mathematics, computer science, and biology courses to prepare themselves for whichever capstone BCB 4000 level course they plan to take.

Proposed Distribution Requirements for the Minor in Bioinformatics and Computational Biology:

1. 5/3 units in BB, MA, CS, and BCB, chosen from the course lists below, with at least 1/3 unit in each of BB, CS, and MA, and no more than 2/3 unit from any of these three areas. No more than 1 course at the 1000 level may be included from any one department.

2. 1/3 unit capstone: any BCB 4000 level class. Must be taken as the last course in the minor sequence.

MA courses

- MA 2610 Statistics for the Life Sciences or MA 2611 Applied Statistics I
- MA 2612 Applied Statistics II
- MA 2621 Probability for Applications
- MA 2051 Ordinary Differential Equations
- MA 2631 Probability
- Any course from the Advanced courses in MA list for the BCB major

CS courses

- CS 1101 Intro to Programming or CS 1102 Accelerated intro to Programming
- CS 2102 Object Oriented Design
- CS 2223 Algorithms
- Any course from the Advanced courses in CS list for the BCB major

BB courses

- BB 1035 Intro to Biotechnology
- BB 1045 Biodiversity
- BB 1025 Human Biology
- BB 2920 Genetics
- BB 2950 Molecular Biology
- BB 2550 Cell Biology
- BB 2002 Microbiology
- BB 2040 Ecology
- Any course from the Advanced courses in BB/CH list for the BCB major

BCB interdisciplinary courses

- BCB 4001 Bioinformatics
- BCB 4002 Biovisualization
- BCB 4003 Biological and Biomedical Database Mining
- BCB 4004 Statistical Methods in Genetics and Bioinformatics

In order to demonstrate how students might choose to fulfill the requirements of the BCB minor, we have listed some example minors below.

Example minors:

BB focus	**CS focus**
BB 2920 Genetics	BB 1045 Biodiversity
BB 2950 Molecular Biology	BB 2040 Ecology
MA 2610 Statistics for the Life Sciences	CS 2102 Object Oriented Design
CS 1101 Introduction to Programming	CS 2223 Algorithms
MA 2612 Applied Statistics II	MA 2611 Applied Statistics I
BB 4001 Bioinformatics	BCB 4002 Biovisualization

CS focus

BB 1035 Introduction to Biotechnology

CS 2102 Object Oriented Design

CS 2223 Algorithms

MA 2611 Applied Statistics I

MA 2621 Probability for Applications

BCB 4003 Biological and Biomedical Database Mining

BCB 4004 Statistical Methods in Genetics and Bioinformatics

MA focus

BB 1035 Introduction to Biotechnology

BB2950 Molecular Biology

MA 2612 Applied Stats II

MA 2621 Probability for Applications

CS 1101 Introduction to Programming

Interdisciplinary focus (would suit students who already have much of the basic quantitative background from their major distribution requirements)

BB 1035 Introduction to Biotechnology

BB 2920 Genetics

CS 2223 Algorithms

MA 2621 Probability for Applications

BCB 4004 Statistical Methods in Genetics and Bioinformatics

BCB 4002 Biovisualization