# Bioinformatics

## Instructions to Students

Students must take at least 15 credits of the following courses, including at least one course from each of the four groups (A-D). A single course cannot fulfill more than one group requirement. Courses used to satisfy requirements for the student’s major may be used to satisfy group requirements but may not be used toward the 15 credits for the minor.

In addition, students must obtain a signature from a member of the Bioinformatics Oversite Committee indicating that they have satisfied the minor requirements before submitting the plan of study to the Office of the Registrar.

### A. Bio-Computer/Computer Science

Complete at least one of the following courses:

* MCB 3421. Introduction to Molecular Evolution and Bioinformatics (3 credits)
* MCB 3602W. Introduction to Bioinformatic Tools for Microbial Genome Annotation (1 credit)
* MCB 3637. Practical Methods in Microbial Genomics (3 credits)
* MCB 5429. Theory and Practice of High Throughput Sequence Analysis (2 credits)
* MCB 5430. Analysis of Eukaryotic Functional Genomic Data (3 credits)
* MCB 5472/EEB 5372. Computational Methods in Molecular Evolution (3 credits)
* EEB 4100. Big Data Science for Biologists (4 credits)
* EEB 4230W. Methods of Ecology (4 credits)
* EEB 5348. Population Genetics (3 credits)
* EEB 5350. Molecular Systematics (2 credits)
* CSE 2102. Introduction to Software Engineering (3 credits)
* CSE 2300W. Digital Logic Design (4 credits)
* CSE 3500. Algorithms and Complexity (3 credits)
* CSE 3502. Theory of Computation (3 credits)
* CSE 3800/BME 4800. Bioinformatics (3 credits)
* CSE 3810/BME 3810. Computational Genomics (3 credits)
* CSE 4102. Programming Languages (3 credits)
* CSE 4701. Principles of Data Bases (3 credits)

### B. Data Banks/Statistics

* STAT 2215Q. Introduction to Statistics II (3 credits)
* STAT 3025Q. Statistical Methods (Calculus level I) (3 credits)
* STAT 3375Q and 3445. Introduction to Mathematical Statistics (3 credits each)
* CSE 4701. Principles of Data Bases (3 credits)

### C. Protein Structure/Biochemistry

* MCB 2000. Introduction to Biochemistry (4 credits)
* MCB 3010. Biochemistry (5 credits)
* MCB 3421. Introduction to Molecular Evolution and Bioinformatics (3 credits)
* MCB 4009. Structure and Function of Biological Macromolecules (3 credits)
* MCB 5011. Enzyme Structure and Function (3 credits)
* PNB 6420. Physiological Proteomics (3 credits)

### D. Genetics

* MCB 2400 or 2410. Genetics (3 credits)
* MCB 3201. Gene Expression (3 credits)
* MCB 3412. Genetic Engineering (3 credits)
* MCB 3413. Concepts of Genetic Analysis (4 credits)
* MCB 3602W. Introduction to Bioinformatic Tools for Microbial Genome Annotation (1 credit)
* MCB 3617. Molecular Biology and Genetics of Prokaryotes (4 credits)
* MCB 3637. Practical Methods in Microbial Genomics (3 credits)
* MCB 5429. Theory and Practice of High Throughput Sequence Analysis (2 credits)
* EEB 5300. Practical Genomics in Ecology and Evolution (3 credits)
* EEB 5348. Population Genetics (3 credits)

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### Additional Options

The following courses can count toward the 15-credit requirement if approved by a member of the Bioinformatics Oversight Committee:

* MCB 3895. Special Topics in Molecular and Cell Biology
* MCB 3899. Independent Study in Molecular and Cell Biology
* MCB 3989. Introduction to Research in Molecular and Cell Biology
* MCB 4989. Introduction to Honors Research in Molecular and Cell Biology
* EEB 3899. Independent Study
* EEB 5895. Investigations in Special Topics
* PNB 3299. Independent Study
* CSE 4095. Special Topics in Computer Science and Engineering
* CSE 4099. Independent Study in Computer Science and Engineering

## Completed Courses

Please list and sum credits for all courses taken at the 2000 level or higher.

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| Course Name | Number of Credits |
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Total credits

(Must be 15 or more with a grade of C or better.)

## Student and Committee Information

### For Students

Student Name

Student ID

Expected graduation

Phone

Email

### For Oversight Committee

* Contact for MCB: J. Peter Gogarten, (860) 486-4061
* Contact for CSE: Ion Mandoiu, (860) 486-3784

Signature indicates that the Committee member approves of the above plan of study for the minor bioinformatics.

Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_

Department \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_