

# BIOINFORMATICS AS

Total Credits: 60

Catalog Edition: 2023-2024

## Program Description

Bioinformatics is an interdisciplinary field of inquiry that effectively combines the life sciences and computer science with information technology. Bioinformaticists use computers to analyze, organize, and visualize biological data in ways that increase the understanding of the molecular components of living organisms. Bioinformatics combines computer science, statistics, and mathematics to analyze and interpret biological data.

Bioinformatics is conceptualizing biology in terms of macromolecules (in the sense of physical-chemistry) and then applying "informatics" techniques (derived from disciplines such as applied math, computer science, and statistics) to understand and organize the information associated with these molecules, on a large-scale. To do this, one must combine elements of biology and computer science. The methodologies and informatics tools developed by the bioinformatics scientists help to manage genomic information.

The Bioinformatics AS is a transfer program that provides the first two years of courses necessary for a four-year baccalaureate degree leading to an advanced degree in the field of bioinformatics. Working closely with a counselor or advisor, students will be able to transfer to local and regional colleges and universities offering advanced programs in bioinformatics. Students are strongly advised to work with a biology, chemistry, and/or computer science faculty member or an academic transfer counselor in order to minimize or prevent the loss of credits upon transfer.

## Program Outcomes

Upon completion of this program, a student will be able to:

- Identify and describe skills specific to programming, data analysis, and data manipulation.
- Analyze contemporary problems in medicine, public health, and biology using computational approaches at the beginner level.

- Synthesize issues across the disciplines of biology, chemistry, computer science, and mathematics.
- Communicate effectively with diverse stakeholders, individually and in group settings, using verbal, written, and electronic modes of communication.

## Program Advisors

[Schedule Appointment](#) with a Program Advisor:

<https://outlook.office365.com/owa/calendar/>

[BiographyDepartmentRockville@montgomerycollege0.onmicrosoft.com/bookings/](mailto:BiographyDepartmentRockville@montgomerycollege0.onmicrosoft.com/bookings/)

### Germantown

- Dr. Joseph Koussa, 240-567-6913, [joseph.koussa@montgomerycollege.edu](mailto:joseph.koussa@montgomerycollege.edu)
- Questions can also be sent to [BiographyAdvising@montgomerycollege.edu](mailto:BiographyAdvising@montgomerycollege.edu)

For more information, please visit <https://www.montgomerycollege.edu/academics/programs/bioinformatics/bioinformatics-as-degree.html> or GT STEP Advising <https://www.montgomerycollege.edu/gtstep>

To view the Advising Worksheet, please visit <https://www.montgomerycollege.edu/documents/counseling-and-advising/advising-worksheets/current-catalog/612.pdf>

2023-2024

# Program Advising Guide

An Academic Reference Tool for Students

# BIOINFORMATICS AS

## Suggested Course Sequence

A suggested course sequence for full-time students follows. All students should review this advising guide and consult an advisor.

### First Semester

ENGL 101 - Introduction to College Writing *3 semester hours*

MATH 181 - Calculus I *4 semester hours* (MATF)

BIOL 202 - Interdisciplinary Bioinformatics-An Introduction *3 semester hours*

CHEM 131 - Principles of Chemistry I *4 semester hours* (NSLD)

### Third Semester

BIOL 151 - Principles of Biology II *4 semester hours*

CHEM 203 - Organic Chemistry I *5 semester hours*

COMM 108 - Foundations of Human Communication *3 semester hours* (HUMD)

MATH 217 - Statistics for Scientists *3 semester hours*

### Second Semester

English Foundation *3 semester hours* (ENGF)

BIOL 150 - Principles of Biology I *4 semester hours* (NSLD)

CHEM 132 - Principles of Chemistry II *4 semester hours* (GEEL)

CMSC 140 - Introduction to Programming *3 semester hours*

Arts Distribution *3 semester hours* (ARTD)

### Fourth Semester

BIOL 222 - Principles of Genetics *4 semester hours*

CMSC 203 - Computer Science I *4 semester hours*

Behavioral and Social Sciences Distribution *3 semester hours* (BSSD) \*Behavioral and Social Sciences Distribution *3 semester hours* (BSSD) \*

## Total Credit Hours: 60

\* ENGL 101/ENGL 101A , if needed for ENGL 102/ENGL 103, or CMSC 204.

\*\* Behavioral and Social Science Distribution (BSSD) courses must come from different disciplines.

## Transfer Opportunities

Montgomery College has partnerships with multiple four-year institutions and the tools to help you transfer. To learn more, please visit <https://www.montgomerycollege.edu/transfer> or <http://artsys.usmd.edu>.

## Get Involved at MC!

Employers and Transfer Institutions are looking for experience outside the classroom.

MC Student Clubs and Organizations: <https://www.montgomerycollege.edu/life-at-mc/student-life/>

## Related Careers

Some require a Bachelor's degree.

Biological Technician, Biostatistician, Bioinformatics Scientist  
Molecular and Cellular Biologist, Epidemiologist Medical and  
Clinical Laboratory Technologist.

## Career Services

Montgomery College offers a range of services to students and alumni to support the career planning process. To learn more, please visit <https://www.montgomerycollege.edu/career>

## Career Coach

A valuable online search tool that will give you the opportunity to explore hundreds of potential careers or job possibilities in Maryland and the Washington D.C. metropolitan area. Get started today on your road to a new future and give it a try. For more information, please visit <https://montgomerycollege.emsicc.com>

## Notes: