

**BIOINFORMATICS
ASSOCIATE OF SCIENCE: 612**

Total Credits: 60
Catalog Edition: 2018-2019

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 these data and lead to new discoveries. 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.

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.

Program Outcomes (continued)

- 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**Germantown**

Prof. Kiersten Newtoff, 240-567-1852

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Rockville

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For more information please visit:

www.montgomerycollege.edu/advising

or

GT STEP Advising

<http://cms.montgomerycollege.edu/EDU/Department4.aspx?id=67267>

2018-2019 Program Advising Guide

An Academic Reference Tool for Students

BIOINFORMATICS

ASSOCIATE OF SCIENCE: 612

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

- CHEM 131 - Principles of Chemistry I
4 semester hours (NSLD)
- ENGL 101 - Introduction to College Writing
3 semester hours
OR
ENGL 101A - Introduction to College Writing
3 semester hours
OR
English foundation
3 semester hours (ENGF)
- MATH 181 – Calculus I
4 semester hours (MATF)
- BIOL 202 – Interdisciplinary Bioinformatics
3 semester hours

Second Semester

- 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
- COMM 108 - Introduction to Human Communication (HUMD)
3 semester hours
- Arts distribution (ARTD)
3 semester hours

Third Semester

- BIOL 151 - Principles of Biology II
4 semester hours
- English foundation (ENGF)
3 semester hours
OR
CMSC 203 Computer Science I
4 semester hours
- CHEM 203 – Organic Chemistry I
5 semester hours
- MATH 217 Biostatistics
4 semester hours

Fourth Semester

- BIOL 222 - Principles of Genetics
4 semester hours
- Behavioral and social sciences distribution
*3 semester hours (BSSD)**
- Behavioral and social sciences distribution
*3 semester hours (BSSD)**
- CMSC 203 - Computer Science I
4 semester hours
OR
CMSC 204 – Computer Science II
4 semester hours

Total Credit Hours: 60

Advising Notes

* Behavioral and Social Science Distribution (BSSD) courses must come from different disciplines. Choose one distribution course that also fulfills the Global and Cultural Perspectives requirement.

BIOINFORMATICS A.S.: 612

Total Credits: 60
Catalog Editions 17-18 through 18-19

Name:

Date:

ID #:

GENERAL EDUCATION: FOUNDATION COURSES	Course	Hours	Grade
English Foundation (EN 102/ENGL 102 or EN 109/ENGL 103)		3	
Math Foundation	MA 181/ MATH 181	4	

GENERAL EDUCATION: DISTRIBUTION COURSES	Course	Hours	Grade
Arts Distribution (ARTD)			
Humanities Distribution (HUMD)	SP 108/ COMM 108		
Behavioral & Social Sciences Distribution (BSSD) *		3	
Behavioral & Social Sciences Distribution (BSSD) *		3	
Natural Sciences Distribution with Lab (NSLD)	BI 107/ BIOL 150	4	
Natural Sciences Distribution with Lab (NSLD)	CH 101/ CHEM 131	4	
General Education Elective (GEEL)	CH 102/ CHEM 132	4	

PROGRAM REQUIREMENTS	Course	Hours	Grade
(only if needed for MA 181/ MATH 181)	MA 180/ MATH 165	(4)	
ENGL 101 or ENGL 101A (if needed for ENGL 102/103 or CS 204/ CMSC 204)*			
	BI 108/ BIOL 151	4	
	BIOL 202	3	
	BI 222/ BIOL 222	4	
	CH 203/ CHEM 203	5	
	CS 140/ CMSC 140	3	
	CS 103/ CMSC 203	4	
	MATH 217	3	

Has student completed the Global Perspectives requirement? Yes No

Overall GPA of 2.0 is required to graduate

Total Credits:

Global Perspectives Course:

Last Modified: July 2018

* 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.

Advising Worksheet Contact: [Anthony Solano](#)

Choose one distribution course that also fulfills the Global and Cultural Perspectives requirement.

Students should consult with a Bioinformatics faculty adviser:

Germantown:

Kiersten Newtoff, Kiersten.newtoff@montgomerycollege.edu, 240-567-1852

Rockville:

Antonio Del Castillo-Olivares, antonio.delcastillo-olivares@montgomerycollege.edu, 240-567-5406

Takoma Park:

Valerie Lantz, Valerie.Lantz@montgomerycollege.edu, 240-567-3989

See an [advisor](#) to submit an [Application for Graduation](#) the semester BEFORE you intend to graduate.

This UNOFFICIAL document is for planning purposes ONLY and completion does not guarantee graduation.

Transfer Opportunities

Montgomery College has partnerships with multiple four-year institutions and the tools to help you transfer.

To learn more please visit:

<http://cms.montgomerycollege.edu/transfer/> or
<http://www.artsys.usmd.edu/>

Get Involved at MC!

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

MC Student Clubs and Organizations

<http://cms.montgomerycollege.edu/edu/plain.aspx?id=2439>

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

<http://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. Visit the website listed below:

<https://montgomerycollege.emsicareercoach.com>

Notes: