

BIOINFORMATICS, GRADUATE CERTIFICATE

The Marshall University bioinformatics certificate is designed to develop a working understanding of a variety of techniques and methods for analyzing vast amounts of biological data. The source of information may be associated with recent genomic research, but may also include data sets related to other complex biological problems involving such topics as structure modeling, database mining, and visualization.

The certificate is designed to complement existing degrees and to suit the needs of students and professionals who want to specialize in the fast-expanding field of bioinformatics. The certificate curriculum is interdisciplinary and includes courses from the College of Science, the College of Engineering and Computer Sciences, and the Joan C. Edwards School of Medicine. Through completion of the certificate, student will have acquired the necessary skills to analyze and interpret the large data sets using various bioinformatics tools.

Students who should apply for the certificate program would be biology, mathematics, chemistry, physics, and medical/biomedical students or medical doctors who desire to acquire skills required to understand bioinformatics methods and technology; computer science students who wish to understand biological concepts that can be analyzed using their programming skills; or health care professionals (medical, pharmaceutical, and agricultural industries) who desire to acquire bioinformatics knowledge relevant to their fields of expertise.

Admission Requirements

- Both senior-level undergraduate students with overall GPAs of at least 2.75 and graduate students may enroll in the certificate program.
- Both undergraduate and graduate students must satisfy the following prerequisite requirement: Successful completion (grade of C or better) of:

Code	Title	Credit Hours
MTH 140 	Applied Calculus	3
or MTH 229 	Calculus/Analytic Geom I (CT)	
One of the following:		3
STA 225 	Introductory Statistics (CT)	
STA 326	Applied Statistical Methods	
STA 345	Applied Prob and Stat	

Program Requirements

Students will earn the certificate by completing 15 credit hours, including 9 credit hours from 3 core courses, 3 credit hours from a first elective course, and another 3 credit hours from a second elective.

Plan of Study

Code	Title	Credit Hours
Required Courses		
CS 505	Computing for Bioinformatics	3
BSC 550	Molecular Biology	3
CS 645	Advanced Topics Bioinformatics	3
Elective I		
BSC 543	Microbial Genetics	3
or CS 510	Advanced Database Systems	
Elective II		
Select one of the following:		3
STA 518	Biostatistics	
CS 540	Digital Image Processing	
CS 630	Machine Learning	
Total Credit Hours		15