Milken Institute School of Public Health — THE GEORGE WASHINGTON UNIVERSITY	**Department of Biostatistics and Bioinformatics** **GW Undergraduate Students** **Minor in Bioinformatics** **2025-2026**

Background
The Minor in Bioinformatics requires 18 credits. Upon successful completion of all requirements, the title of Minor and the courses taken in support of the Field are entered on the student's transcript.

Program Director
Prof. Keith A. Crandall, PhD
800 22nd Street, NW
Science and Engineering Hall, Suite 7000
Washington, DC 20052
kcrandall@gwu.edu
571-553-0107

GWSPH Undergraduate Advisors

950 New Hampshire Avenue, Suite 200
Washington, DC 20052
sphundergrad@gwu.edu

Overview
The Milken Institute School of Public Health (SPH) offers the Minor in Bioinformatics. Bioinformatics is an interdisciplinary minor offering focused training that integrates concepts in health, biology, statistics, and computer science. The program develops and integrates skills across the core competency areas in bioinformatics, including computation, biology, statistics/mathematics, and foundational knowledge in bioinformatics. The Bioinformatics Minor consists of at least 18 credits (12 credits of required public health courses and six (6) credits of bioinformatics related elective courses). Students who complete this program enhance their core undergraduate program to add significant additional skills that aid in entry to the top graduate programs in bioinformatics and computational biology in the world, leading professional schools (including public health, law school, medical school, or dental school), or employment in public health, biotechnology, pharmaceutical, or software development companies.

Admissions Requirements
Applicants must have a 2.8 cumulative GPA or above.

To Add or Drop a Minor and to Change the Original Program of Study
Please see the GWSPH Undergraduate Advisor or Program Director for information, to drop the minor, assistance in the selection of the elective course, and any amendment to the courses on the original program of study. GWSPH will not process requests to add a Minor in Bioinformatics during the registration period. To add the minor please complete this form: https://publichealth.gwu.edu/academics/gwsph-undergraduate-declaration-form

SPH Double-Counting Policy
Students pursuing a second major may double-count up to three courses (maximum of 10 credits) toward their BS core requirements or guided electives. Students with a declared SPH major who pursue a minor may double-count up to two courses (maximum of 7 credits). Students may also double-count SPH undergraduate core courses toward another program's major or minor requirements, but only if the other program permits it. There are two exceptions to this policy:
- Double-Counting Across SPH Programs: Students who pursue a double major in two SPH programs will be permitted to double-count one additional course, for a maximum of 13 credits. SPH majors can similarly share three courses (maximum of 10 credits) with an SPH minor.
- BS Nutrition, Minor in Food Leadership: Students pursuing a minor in Food Leadership may only double-count EXNS 2119 Introduction to Nutrition Science (3 credits) toward both their BS in Nutrition requirements and the minor. No other Nutrition core requirements or guided electives may be double-counted.

Prerequisite Coursework	
Required Course	**Prerequisite(s)**
PUBH 3201	This course assumes a basic knowledge of biology (equivalent to BISC 1112, BISC 1116, or PUBH 2110).
PUBH 3202/4201	BISC 1111/1115 or 1112/1116, or equivalent
PUBH 4202	PUBH 4201 or equivalent (programming)

Required Bioinformatics Courses
Take all four courses - 12 credits

Courses	Credits	Title
PUBH 3201	3	Introduction to Bioinformatics
PUBH 3202	3	Introduction to Genomics
PUBH 4201	3	Practical Computing (or CSCI 1012 or CSCI 1121 or CSCI 1131)
PUBH 4202	3	Bioinformatics Algorithms and Data Structures (or CSCI 1112)

Approved Bioinformatics Elective Courses
Students may fulfill the elective requirement (6 credits) by taking any course on the Approved Bioinformatics Elective Course List shown below. Any course not on this list requires written approval by the Program Director in advance.

Courses	Credits	Course Title
ANTH 2406	3	Human Evolutionary Genetics
BISC 2207	3	Genetics
BISC 3209	3	Molecular Biology
BME 2820	3	Biomedical Engineering Programming I
BME 2825	3	Biomedical Engineering Programming II
BME 3820	4	Principles and Practice of Biomedical Engineering
CHEM 3165	3	Biochemistry I
CHEM 3166	3	Biochemistry II
CSCI 3212	4	Algorithms
CSCI 4364	3	Machine Learning
EMSE 3760	3	Discrete Systems Simulation
EMSE 3850	3	Quantitative Models in Systems Engineering
EMSE 4765	3	Data Analysis for Engineers & Scientists
MATH 3359	3	Introduction to Mathematical Modeling
MATH 3553	3	Introduction to Numerical Analysis
MATH 3613	3	Introduction to Combinatorics
MATH 3730	3	Computability Theory
MATH 3740	3	Computational Complexity
PUBH 3131	3	Epidemiology: Measuring Health and Disease
PUBH 3151(W)	3	Current Issues in Bioethics
PUBH 4199	1-3	Undergraduate Independent Study
PUBH 6859	3	High Performance and Cloud Computing
PUBH 3242	3	Health Data Visualization
STAT 2183W	3	Intermediate Statistics Lab/Packages
STAT 3119	3	Analysis of Variance
STAT 3187	3	Introduction to Sampling
STAT 4157	3	Introduction to Mathematical Statistics I

STAT 4188	3	Nonparametric Statistics Inference
STAT 4189	3	Mathematical Probability and Applications I
PUBH 3995	Up to 3 credits	Undergraduate Research
CSCI 4366	3	Neural Networks and Deep Learning
CSCI 4511	3	Artificial Intelligence Algorithms
BISC 4234	3	Microbial Genomics Laboratory
STAT 4158	3	Introduction to Mathematical Statistics II
STAT 4181	3	Applied Time Series Analysis