

MASTER OF SCIENCE IN THE FIELD OF HEALTH DATA SCIENCE, BIOINFORMATICS CONCENTRATION

PROGRAM DIRECTOR: M. PEREZ-LOSADA

The master of science in health data science program positions graduates to be leaders and practitioners in public health and medicine. Students choose one of two concentrations: biostatistics or bioinformatics. The program offers a unique blend of the two disciplines, which helps practitioners become successful leaders and collaborators in interdisciplinary research. Each concentration focuses on the foundations of the respective discipline to acquire fundamental knowledge and experience in the subject area while gaining core knowledge in the foundations of the other concentration.

Bioinformatics concentration

The bioinformatics concentration prepares students for work as data analysts, informaticians, or software developers with opportunities in governmental, academic, and private sector settings. Graduates are primed to pursue independent doctoral-level research at leading programs in bioinformatics and computational biology. Through this research, students gain an understanding of the risk factors for chronic diseases such as cancer and how infectious diseases, such as Zika, Ebola, HIV/AIDS, and COVID-19, spread and evolve.

Visit the program website (<https://publichealth.gwu.edu/content/health-and-biomedical-data-science-ms/>) for additional information.

ADMISSIONS

Visit the Milken Institute School of Public Health website (<https://publichealth.gwu.edu/>) for additional information about academic programs and information about GWSPH. Graduate admissions information, including application requirements and deadlines, can be found on the GWSPH Graduate Admissions website (<https://publichealth.gwu.edu/admissions/graduate-admissions/>).

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 6 credits in core courses, 18 credits in concentration-specific courses, up to 10 credits in elective courses, and a minimum of 2 credits in research and thesis work.

Code	Title	Credits
Required		
Core courses		
PUBH 6080	Pathways to Public Health	

PUBH 6850	Introduction to SAS for Public Health Research
PUBH 6851	Introduction to R for Public Health Research
PUBH 6852	Introduction to Python for Public Health Research
PUBH 6860	Principles of Bioinformatics
Bioinformatics concentration-specific courses	
PUBH 6859	High Performance and Cloud Computing
PUBH 6861	Public Health Genomics
PUBH 6854	Applied Computing in Health Data Science
PUBH 6868	Quantitative Methods
PUBH 6884	Bioinformatics Algorithms and Data Structures
PUBH 6886	Statistical and Machine Learning for Public Health Research
Electives	
Up to 10 credits in pre-approved elective courses common to both program concentrations (bioinformatics and biostatistics) and/or courses limited to the bioinformatics concentration listed below. Other courses may be approved in advance by the advisor.	
Electives options common to both the bioinformatics and biostatistics concentrations	
PUBH 6853	Use of SAS for Data Management and Analysis
PUBH 6856	Advanced SAS for Public Health Research
PUBH 8885	Computational Biology
PUBH 6899	Topics in Biostatistics and Bioinformatics
PUBH 8875	Linear Models in Biostatistics
PUBH 8877	Generalized Linear Models in Biostatistics
STAT 6223	Bayesian Statistics: Theory and Applications
Elective options limited to the bioinformatics concentration	
BIOC 6240	Next Generation Sequencing
CSCI 6221	Advanced Software Paradigms
CSCI 6231	Software Engineering
PUBH 6238	Molecular Epidemiology

PUBH 6244	Cancer Epidemiology
PUBH 6262	Introduction to Geographic Information Systems
PUBH 6263	Advanced GIS
PUBH 6276	Public Health Microbiology
PUBH 6278	Public Health Virology
PUBH 6894	Research Analytics
PUBH 8871	Statistical Inference for Public Health Research II
PUBH 8878	Statistical Genetics

Research and Thesis

At least 1 credit taken in each of the following courses:

PUBH 6897	Research in Biostatistics and Bioinformatics
PUBH 6898	Master of Science Thesis