MASTER OF SCIENCE IN THE FIELD OF HEALTH DATA SCIENCE, APPLIED 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: applied biostatistics or applied bioinformatics. The program offers a unique blend of the two disciplines, which helps practitioners become successful 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, and/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 9 credits in core courses, 15 credits in concentration-specific courses, 9 credits in elective courses, and 3 credits in consulting and thesis practicum.

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	
PUBH 8870	Statistical Inference for Public Health Research I	
Applied bioinformatics concentration-specific courses		
PUBH 6859	High Performance and Cloud Computing	
PUBH 6861	Public Health Genomics	
PUBH 6884	Bioinformatics Algorithms and Data Structures	
PUBH 6854	Applied Computing in Health Data Science	
PUBH 6886	Statistical and Machine Learning for Public Health Research	

Electives

9 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.

Code	Title	Credits
Electives options common to both the bioinformatics and biostatistics concentrations		
PUBH 6853	Use of Statistical Packages for Data Management and Data 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 applied 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

Practicum (consulting and thesis)

3 credits, taken as follows:

PUBH 6897	Research in Biostatistics and Bioinformatics (taken for 2 credits)
PUBH 6898	Master of Science Thesis (1 credit)