PUBLIC HEALTH DATA SCIENCE (ADVANCED CERTIFICATE)

NYSED: 41173 **HEGIS:** 1214.00 **CIP.** 30.7099

Program Description

Public Health Data Science draws upon methods from statistics, epidemiology and computer science. The advanced certificate in Public Health Data Science will provide students and practitioners with training in biostatistics, epidemiology, regression and data science, as applied to public health research and practice. This will prepare them to work at the intersection of these fields to advance public health research and practice.

Who Should Enroll?

The advanced certificate is currently open to non-student professionals and GPH students in the MPH and MS programs. Current GPH students should review the curriculum page for further information. Students will work in many possible settings. The certificate training provides a very broad base of knowledge that will gain them entry into several types of positions:

- Academic Medical Center, e.g., Biostatistics Departments, Predictive Analytics Cores
- Pharmaceutical Company
- Health Insurance Company
- Financial Consulting
- UNICEF, WHO, etc.

Prerequisites

Applicants must have already obtained an undergraduate degree. They should have work experience in data science OR they should be currently enrolled in or have completed a Masters of Public Health, a Masters of Science in Biostatistics, a Masters of Science in Epidemiology, a PhD in Public Health, a Masters of Public Policy, Masters of Public Administration, Law or Medical, Dental or Nursing degree program. Other graduate degree programs will be considered on a case-by-case basis. They should be able to articulate a clear interest in and understanding of Public Health Data Science.

Admissions

Current NYU GPH students should fill out the online application found here (https://docs.google.com/forms/d/e/1FAIpQLSdvi45RpLDEqY5ABoZ0vzoFn6kT6sJU7pUu3o7xGjfMHykRpA/viewform/?gxids=7628).

Non-NYU students should apply online through SOPHAS Express (https://sophasexpress.liaisoncas.com/applicant-ux/#/login), the common application for schools and programs of public health. In order to be eligible for the certificate, you must hold the following:

- Bachelor's degree or US equivalent from an accredited institution
- Minimum 2.75 cumulative undergraduate GPA

To apply, you must submit your application as well as the following materials:

- Scanned copies of transcripts for all post-secondary education completed, regardless of whether a degree was awarded
- Resume or CV
- Personal statement of no longer than 1200 words expressing a rationale for pursuing the certificate
- 1 letter of support from either a professional or academic reference

The certificate programs are offered during the fall, spring, and summer terms and follow the NYU academic calendar.

Program Requirements

The advanced certificate may be taken as a hybrid of online and classroom-based courses. The courses focus on methods for study design and analysis and on statistical computing and data science tools. Listed below are the required six courses that provide the training for the Public Health Data Science advance certificate. International Students who pursue the certificate with the MPH or MS are not allowed to receive a Program Extension as the certificate is not required to complete the MPH or MS program. Therefore, they must complete the certificate by the time they graduate from their MPH or MS.

GPH MS-Biostatistics students planning to earn the advanced certificate must take a total of **49 credits**, 13 credits of which will double count with the MS, plus 3 additional credits taken as GPH-GU 2338 Machine Learning in Public Health.

GPH MS-Epidemiology and GPH MPH students planning to earn the advanced certificate must take a total of **53 credits**, 9 credits of which will double count with the MS, plus 7 additional credits.

Course	Title	Credits
GPH-GU 2995	Biostatistics for Public Health [1]	3
or GPH-GU 5995	Biostatistics for Public Health	
GPH-GU 2106	Epidemiology [3]	3
or GPH-GU 5106	Epidemiology	
GPH-GU 2183	Introduction to Statistical Programming in R	2
GPH-GU 2184	Intermediate Statistical Programming in R	2
GPH-GU 2353	Regression I: Linear Regression and Modeling [2]	3
GPH-GU 2338	Machine Learning in Public Health	3
Total Credits		**16**

1 Students who have taken Biostatistics or its equivalent prior to enrolling at GPH may substitute GPH-GU 3225 Statistical Inference

2 Students who have taken Regression I or its equivalent prior to enrolling at GPH may substitute GPH-GU 2354 Regression II: Categorical Data Analysis

3 Students who have taken Epidemiology or its equivalent prior to enrolling at GPH may substitute GPH-GU 2450 Intermediate Epidemiology, GPH-GU 2930 Epidemiological Methods and Design, APSTA-GE 2012 Causal Inference, GPH-GU 2363 Causal Inference: Design and Analysis.

Note: Students who have taken the equivalent of any of these courses prior to their enrollment at GPH will substitute advanced courses on the same topics.

Sample Plan of Study

The sequence below is for students who want to complete the certificate in two semesters. Students who take fewer credits each term should speak to an advisor to map out their courses.

Course	Title	Credits
1st Semester/Term		
GPH-GU 2995 or GPH-GU 5995	Biostatistics for Public Health or Biostatistics for Public Health	3
GPH-GU 2106 or GPH-GU 5106	Epidemiology or Epidemiology	3
GPH-GU 2183	Introduction to Statistical Programming in R	2
	Credits	**8**
2nd Semester/Term		
GPH-GU 2184	Intermediate Statistical Programming in R [1]	2
	Credits	**2**
3rd Semester/Term		
GPH-GU 2353	Regression I: Linear Regression and Modeling	3
GPH-GU 2338	Machine Learning in Public Health	3
	Credits	**6**
	Total Credits	**16**

[1] GPH-GU 2184 Intermediate Statistical Programming in R is taken in January.

Learning Outcomes

It is absolutely necessary for students to have strong competencies in the analytical tools of both public health and modern data science in order to be competitive for several types of jobs in public health and in other industries that require modern data analysis and manipulation. The certificate program provides an organized framework for students to obtain the skillset needed to perform well in these areas. Each course in this certificate teaches students both technical fundamentals and tools, and highlights their ties to public health data sets and research questions. This is done through teaching examples and analyses of real public health data in homework and projects.

Upon completion of the Public Health Data Science Advanced Certificate, graduates will have the skills and competencies to:

1. Apply descriptive and inferential methodologies according to the type of study design for answering a particular research question.
2. Harness basic concepts of probability, random variation and commonly used statistical probability distributions.
3. Distinguish among the different measurement scales and the implications for selection of statistical methods to be used based on these distinctions.
4. Implement the appropriate analytic methods for calculating key measures of association.
5. Understand and apply ethical principles to data acquisition, management, storage, sharing, and analysis
6. Interpret results of statistical analyses found in public health research studies.

Policies

Program Policies

Double-Counting of Credits

Upon completion of the certificate and the **MPH or the MS in Epidemiology**, students will have a total of 53 credits. The certificate is 16 credits, 9 credits of which may be double-counted with the 46-credit MPH or MS. The courses that are double counted include GPH-GU 2995 Biostatistics for Public Health or GPH-GU 5995 Biostatistics for Public Health, GPH-GU 2106 Epidemiology or GPH-GU 5106 Epidemiology, and GPH-GU 2353 Regression I: Linear Regression and Modeling (3)., and then students will take an additional 7 certificate credits.

Upon completion of the certificate and the **MS in Biostatistics**, students will have a total of 49 credits. The certificate is 16 credits, 13 credits of which may be double-counted with 46-credit MS. The courses that are double counted include GPH-GU 2995 Biostatistics for Public Health or GPH-GU 5995 Biostatistics for Public Health, GPH-GU 2106 Epidemiology or GPH-GU 5106 Epidemiology, GPH-GU 2183 Introduction to Statistical Programming in R, GPH-GU 2184 Intermediate Statistical Programming in R, and GPH-GU 2353 Regression I: Linear Regression and Modeling (3)., and then students will also take GPH-GU 2338 Machine Learning in Public Health (3 credits).

NYU Policies

University-wide policies can be found on the New York University Policy pages (https://bulletins.nyu.edu/nyu/policies/).

School of Global Public Health Policies

A list of related academic policies can be found on the School of Global Public Health academic policies page (https://bulletins.nyu.edu/graduate/global-public-health/academic-policies/).