

# MASTER OF SCIENCE IN THE FIELD OF BIOSTATISTICS

Program Director and Academic Advisor: A. F. Elmi

The master of science degree program in biostatistics is jointly administered by the Department of Statistics in the Columbian College of Arts and Sciences, the Department of Biostatistics and Bioinformatics in the Milken Institute School of Public Health, and its associated research facility, The Biostatistics Center. This degree program is accredited by the Middle States Commission on Higher Education through the CCAS and by the Council on Education for Public Health through the SPH Regulations, and requirements for this graduate degree have been designed to be compatible with the policies and scholarship requirements of both CCAS and SPH. The degree is conferred by CCAS.

Visit the program website (<https://statistics.columbian.gwu.edu/ms-biostatistics/>) for additional information.

## ADMISSIONS

Admission to this program is not being offered at this time. Related programs in the field are offered by the Milken Institute School of Public Health (<http://bulletin.gwu.edu/public-health/biostatistics-bioinformatics/mph-biostatistics/>).

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: 33 credits, including 18 credits in statistics courses, 7 credits in public health courses, 6 credits in elective courses, 2 credits in consulting, and successful completion of a master's comprehensive examination.

Code	Title	Credits
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### Prerequisite courses

The courses listed below (or equivalents) are prerequisites for admission consideration and must appear on the student's transcript. Students may apply to the program only after they have fulfilled this requirement:

MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
STAT 2118	Regression Analysis	

Applicants lacking the courses listed below (or equivalents) are considered for admission; however, if admitted, the student is required to complete these courses within two semesters of

matriculation in the program. Credit earned in these courses does not count toward the 33 credits required for the degree and grades earned are not reflected in the overall grade-point average.

Code	Title	Credits
MATH 2184	Linear Algebra I	
MATH 2233	Multivariable Calculus	

One of the following:

PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis *	
STAT 2183	Intermediate Statistics Lab/Packages	

Code	Title	Credits
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### Required for the degree

Statistics courses

PUBH 6266	Biostatistical Methods	
or PUBH 8877	Generalized Linear Models in Biostatistics	
STAT 6201	Mathematical Statistics I	
STAT 6202	Mathematical Statistics II	
STAT 6210	Data Analysis	
STAT 6227	Survival Analysis	
STAT 6255	Clinical Trials	
or PUBH 6866	Principles of Clinical Trials	

Public health courses

PUBH 6003	Principles and Practices of Epidemiology	
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And two courses (2 credits) selected from the following:

PUBH 6262	Introduction to Geographic Information Systems	
PUBH 6263	Advanced GIS	
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 6856	Advanced SAS for Public Health Research	

And 2 credits in any PUBH course(s) in the 6800 range.

## Electives

6 credits in elective courses selected from the following:

PUBH 6854 Applied Computing in Health Data Science

PUBH 6859 High Performance and Cloud Computing

PUBH 6860 Principles of Bioinformatics

PUBH 6861 Public Health Genomics

PUBH 6862 Applied Linear Regression Analysis for Public Health Research

PUBH 6863 Applied Meta-Analysis

PUBH 6865 Applied Categorical Data Analysis for Public Health Research

PUBH 6879 Propensity Score Methods for Causal Inference in Observational Studies

PUBH 6884 Bioinformatics Algorithms and Data Structures

PUBH 6886 Statistical and Machine Learning for Public Health Research

PUBH 6887 Applied Longitudinal Data Analysis for Public Health Research

STAT 3187 Introduction to Sampling

STAT 4181 Applied Time Series Analysis

STAT 4188 Nonparametric Statistics Inference

STAT 6197 Fundamentals of SAS Programming for Data Management

STAT 6214 Applied Linear Models

STAT 6215 Applied Multivariate Analysis I

STAT 6216 Applied Multivariate Analysis II

STAT 6217 Design of Experiments

STAT 6223 Bayesian Statistics: Theory and Applications

STAT 6225 Longitudinal Data Analysis

STAT 6231 Categorical Data Analysis

STAT 6240 Statistical Data Mining

STAT 6242 Modern Regression Analysis

STAT 6252 Statistical Methods in Bioinformatics and Computational Biology

STAT 6254 Statistical Genetics

STAT 6287 Sample Surveys

STAT 6289 Topics in Statistics

STAT 8226 Advanced Biostatistical Methods

STAT 8265 Multivariate Analysis

STAT 8273 Stochastic Processes I

STAT 8281 Advanced Time Series Analysis

STAT 8288 Topics in Sample Surveys

## Consulting

PUBH 6883 Biostatistics Consulting Practicum

PUBH 6869 Principles of Biostatistical Consulting

## Master's comprehensive examination

Students must successfully complete a master's comprehensive examination, a written examination in the field of biostatistics based on the material covered in PUBH 6266 or PUBH 8877. The examination is administered by the faculty of the Department of Biostatistics and Bioinformatics in the Milken Institute School of Public Health.