

BIOSTATISTICS AND BIOMEDICAL ANALYTICS, GRADUATE CERTIFICATE

Credential: Graduate Certificate

Field of Study: Biostatistics and Biomedical Analytics

Program Overview

The Graduate Certificate in Biostatistics and Biomedical Analytics provides a strong foundation in biostatistical methods along with hands-on experience in biomedical applications such as clinical trial design, data analysis, and modeling. This 15-credit-hour certificate is designed for graduate students, working professionals, and researchers, and offers a flexible elective structure supporting specialized training pathways in biostatistical methods, epidemiology and public health analytics, or biomedical data analytics.

The certificate is administered by the Department of Population and Quantitative Health Sciences in the School of Medicine. Credits earned are transferable if needed. The certificate is issued through the School of Graduate Studies, and the coursework will appear on an official Case Western Reserve University transcript.

Graduate Policies

For graduate policies and procedures, please review the [School of Graduate Studies](#) section of the General Bulletin.

Program Requirements

The program requires five courses (15 credit hours):

Code	Title	Credit Hours
Required Courses:		
PQHS 431	Statistical Methods I	3
PQHS 432	Statistical Methods II	3
PQHS 435	Survival Data Analysis	3
or PQHS 459	Longitudinal Data Analysis	
Elective Track (choose two courses)		6
Total Credit Hours		15

Concentrations

Students can specialize in one of three Elective Tracks (choose 2 courses, 6 credits):

Track 1: Biostatistical Modeling and Methods

For students interested in statistical theory and advanced methodologies.

Code	Title	Credit Hours
PQHS 450	Clinical Trials and Intervention Studies	3
STAT 439	Bayesian Scientific Computing	3
PQHS 453	Categorical Data Analysis	3

PQHS 480	Introduction to Mathematical Statistics	3
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Track 2: Epidemiology and Public Health Analytics

For students interested in epidemiological study design and statistical applications in public health.

Code	Title	Credit Hours
PQHS 490	Epidemiology: Introduction to Theory and Methods	3
PQHS 500	Design and Analysis of Observational Studies	3
PQHS 452	Statistical Methods for Genetic Epidemiology	3
PQHS 484	Global Health Epidemiology	1 - 3
PQHS 491	Advanced Study Design and Analysis in Population Health Sciences	3

Track 3: Applied Data Analytics in Biomedical Research

For students interested in computational and applied aspects of data analytics in biomedical sciences.

Code	Title	Credit Hours
PQHS 471	Machine Learning & Data Mining	3
PQHS 515	Secondary Analysis of Large Health Care Databases	3
MATH 473	Introduction to Mathematical Image Processing and Computer Vision	3
DSCI 432	Geospatial Data Science: Explore, Analyze and Model Spatial, Temporal & Spatiotemporal Data	3

Sample Plan of Study

For students planning to complete the program in one year (e.g., full-time):

Fall		Credit Hours
PQHS 431	Statistical Methods I	3
Elective		3
Credit Hours		6
Spring		Credit Hours
PQHS 432	Statistical Methods II	3
PQHS 435	Survival Data Analysis	3
or PQHS 459	or Longitudinal Data Analysis	
Elective		3
Credit Hours		9
Total Credit Hours		15