

Biostatistics Competencies

M.S. in Biostatistics

Graduates of the <u>MS in Biostatistics</u> will be able to:	Primarily Gained through These Required Courses	Secondarily Gained through These Elective or Other Required Courses
Demonstrate a broad knowledge and understanding of current statistical theory, methods, and practices in the health sciences.	BIOS:5710 Biostatistical Methods I BIOS:5720 Biostatistical Methods II BIOS:5730 Biostatistical Methods in Categorical Data BIOS:6610 Statistical Methods in Clinical Trials STAT:4100 Mathematical Statistics I STAT:4101 Mathematical Statistics II STAT:5100 Statistical Inference I STAT:5101 Statistical Inference II EPID:4400 Epidemiology I: Principles	BIOS:6210 Applied Survival Analysis BIOS:6310 Introductory Longitudinal Data Analysis BIOS:6650 Comparative Effectiveness Research Methods for Observational Data BIOS:6810 Bayesian Methods and Design BIOS:7110 Theory of Biostatistics I BIOS:7120 Theory of Biostatistics II BIOS:7210 Survival Data Analysis BIOS:7310 Longitudinal Data Analysis BIOS:7320 Advanced Clinical Trials BIOS:7410 Analysis of Categorical Data STAT:4520 Bayesian Statistics
Effectively collaborate on a research team.	BIOS:5510 Biostatistical Computing BIOS:5720 Biostatistical Methods II BIOS:5730 Biostatistical Methods in Categorical Data BIOS:6610 Statistical Methods in Clinical Trials BIOS:7500 Preceptorship in Biostatistics	BIOS:6210 Applied Survival Analysis BIOS:6310 Introductory Longitudinal Data Analysis BIOS:7270 Scholarly Integrity in Biostatistics
Develop statistical designs and implement analyses for health science investigations.	BIOS:5720 Biostatistical Methods II BIOS:5730 Biostatistical Methods in Categorical Data BIOS:6610 Statistical Methods in Clinical Trials BIOS:7500 Preceptorship in Biostatistics	BIOS:6210 Applied Survival Analysis BIOS:6310 Introductory Longitudinal Data Analysis
Develop computer programs for the management and analysis of data sets.	BIOS:5510 Biostatistical Computing BIOS:5710 Biostatistical Methods I BIOS:5720 Biostatistical Methods II BIOS:5730 Biostatistical Methods in Categorical Data	BIOS:6210 Applied Survival Analysis BIOS:6310 Introductory Longitudinal Data Analysis
Prepare reports and publications resulting from health science studies.	BIOS:5710 Biostatistical Methods I BIOS:5720 Biostatistical Methods II BIOS:5730 Biostatistical Methods in Categorical Data BIOS:6610 Statistical Methods in Clinical Trials BIOS:7500 Preceptorship in Biostatistics	BIOS:6210 Applied Survival Analysis BIOS:6310 Introductory Longitudinal Data Analysis BIOS:7270 Scholarly Integrity in Biostatistics
Effectively communicate key statistical principles to a non-statistical audience.	BIOS:5710 Biostatistical Methods I BIOS:5720 Biostatistical Methods II BIOS:5730 Biostatistical Methods in Categorical Data BIOS:6610 Statistical Methods in Clinical Trials BIOS:7500 Preceptorship in Biostatistics	BIOS:6210 Applied Survival Analysis BIOS:6310 Introductory Longitudinal Data Analysis BIOS:7270 Scholarly Integrity in Biostatistics

Ph.D. in Biostatistics

Graduates of the <u>PhD in Biostatistics</u> will be able to:	Primarily Gained through These Required Courses	Secondarily Gained through These Elective or Other Required Courses
Master MS competencies	See previous page	
Demonstrate an increased level of knowledge and understanding of current statistical theory, methods, and practices in the health sciences.	BIOS:7110 Theory of Biostatistics I BIOS:7120 Theory of Biostatistics II BIOS:7210 Survival Data Analysis BIOS:7310 Longitudinal Data Analysis BIOS:7410 Analysis of Categorical Data STAT:7200 Linear Models	BIOS:6650 Comparative Effectiveness Research Methods for Observational Data BIOS:6720 Statistical Machine Learning for Biomedical & Public Health Data BIOS:6810 Bayesian Methods and Design BIOS:7320 Advanced Clinical Trials BIOS:7600 Advanced Biostatistics Seminar STAT:7520 Bayesian Statistics STAT:7400 Computer Intensive Statistics
Develop new statistical methods.	BIOS:7900 Dissertation	BIOS:7600 Advanced Biostatistics Seminar
Design, manage data, analyze and interpret data from a variety of experimental and observational studies.	BIOS:7210 Survival Data Analysis BIOS:7310 Longitudinal Data Analysis BIOS:7410 Analysis of Categorical Data BIOS:7500 Preceptorship in Biostatistics	BIOS:6650 Comparative Effectiveness Research Methods for Observational Data BIOS:6720 Statistical Machine Learning for Biomedical & Public Health Data BIOS:6810 Bayesian Methods and Design BIOS:7320 Advanced Clinical Trials BIOS:7600 Advanced Biostatistics Seminar STAT:7520 Bayesian Statistics
Communicate research findings, including new statistical methods developed, effectively to various audiences in writing and through oral presentation.	BIOS:7210 Survival Data Analysis BIOS:7310 Longitudinal Data Analysis BIOS:7410 Analysis of Categorical Data BIOS:7500 Preceptorship in Biostatistics BIOS:7900 Dissertation	BIOS:6650 Comparative Effectiveness Research Methods for Observational Data BIOS:6720 Statistical Machine Learning for Biomedical & Public Health Data BIOS:6810 Bayesian Methods and Design BIOS:7320 Advanced Clinical Trials BIOS:7600 Advanced Biostatistics Seminar STAT:7520 Bayesian Statistics

MPH-Quantitative Methods Subtrack

In addition to mastering the core competencies, graduates of the <u>MPH in Quantitative Methods</u> will be able to:	Primarily Gained through These Required Courses	Secondarily Gained through These Elective or Other Required Courses
Demonstrate a broad knowledge and understanding of statistical techniques used in public health studies and investigations.	BIOS:4120 Introduction to Biostatistics BIOS:5120 Regression Modeling and ANOVA in the Health Sciences BIOS:6110 Applied Categorical Data Analysis BIOS:5710 Biostatistical Methods I BIOS:5720 Biostatistical Methods II BIOS:5730 Biostatistical Methods in Categorical Data	BIOS:5310 Research Data Management BIOS:5510 Biostatistical Computing BIOS:6210 Applied Survival Analysis BIOS:6310 Introductory Longitudinal Data Analysis BIOS:6650 Comparative Effectiveness Research Methods for Observational Data BIOS:6610 Statistical Methods in Clinical Trials BIOS:7270 Scholarly Integrity in Biostatistics STAT:3100 Intro to Mathematical Statistics I STAT:3101 Intro to Mathematical Statistics II
Serve as an advocate for good statistical design in public health investigations		
Apply appropriate statistical methods for inference about public health related questions, and describe the results to public health professionals and educated lay audiences.		
Interpret the results of statistical analyses in public health related publications for public health professionals and educated lay audiences.		
Promote the use of sound statistical methods to answer open questions in public health practice.		
Function as a collaborator on public health projects, taking a leadership role in the design and implementation of projects.	MPH:7000 MPH Practicum Experience	(Graduate Research Assistantship)
Assume responsibility for the design and implementation of analyses in investigations of public health questions.	BIOS:5710 Biostatistical Methods I BIOS:5720 Biostatistical Methods II BIOS:6110 Applied Categorical Data Analysis MPH:7000 MPH Practicum Experience	BIOS:6210 Applied Survival Analysis BIOS:6310 Introductory Longitudinal Data Analysis
Manage the data for public health related projects such as large community surveys, laboratory investigations, and multi-center clinical trials	BIOS:5510 Biostatistical Computing	BIOS:5310 Research Data Management BIOS:6610 Statistical Methods in Clinical Trials
Demonstrate effective written and oral communication skills when communicating quantitative information and statistical inferences to different audiences of public health professionals	BIOS:4120 Introduction to Biostatistics BIOS:5120 Regression Modeling and ANOVA in the Health Sciences BIOS:6110 Applied Categorical Data Analysis BIOS:5710 Biostatistical Methods I BIOS:5720 Biostatistical Methods II BIOS:5730 Biostatistical Methods in Categorical Data MPH:7000 MPH Practicum Experience	BIOS:6210 Applied Survival Analysis BIOS:6310 Introductory Longitudinal Data Analysis (Graduate Research Assistantship)