

# Statistics, MS

The field of statistics plays a critical role in the support of nearly every industry including technology; business, management, and finance; healthcare and pharmaceuticals; and more. The Master of Science in Statistics develops a comprehensive and flexible skill set that allows graduates to adapt to an ever-changing job market in various occupations and industries. In an era of increasing automation of Big Data, the value of the rigor of statistical thinking and analysis by individuals grows with the rise of automated Big Data analysis (e.g., artificial intelligence and machine learning). This program in statistics is designed to provide learners with a solid foundation in applied, modern, and computational approaches to statistical analysis and exposure to the statistical thinking skills necessary to critically assess data and answer business and research questions across domains. Core courses integrate theory and application, enabling students to be ready for the job on day one. Upon application, each student selects an industry concentration (biostatistics, statistical machine learning, and statistical theory and modeling) to examine statistical theories and applied methodologies most relevant to specific career pathways. In this degree program, students are admitted to the college associated with their concentration, and their degree is awarded by that college. The concentrations are associated with the following colleges:

- Biostatistics—Bouvé College of Health Sciences
- Statistical machine learning—Khoury College of Computer Sciences
- Statistical theory and modeling—College of Science

Students will follow all policies associated with their home college. Each student finishes the program with experiential courses such as a thesis, capstone, or consulting project, where they gain hands-on, project-based experience addressing business problems and presenting and communicating the findings and recommendations.

## Program Requirements

- Concentrations and course offerings may vary by campus and/or by program modality. Please consult with your advisor or admissions coach for the course availability each term at your campus or within your program modality.
- Certain options within the program may be *required* at certain campuses or for certain program modalities. Please consult with your advisor or admissions coach for requirements at your campus or for your program modality.

Complete all courses and requirements listed below unless otherwise indicated.

## Required Courses

Code	Title	Hours
MATH 5010	Foundations of Statistical Theory and Probability	4
MATH 6241	Stochastic Processes	2
MATH 6243	Statistical Learning	4
PHTH 6800 or PHTH 6801	Causal Inference in Public Health Research Causal Inference 1	3-4
PHTH 6830	Generalized Linear Models	4

## Concentrations

Complete one of the following concentrations:

- Biostatistics (p. 2) (Bouvé College of Health Sciences)
- Statistical Machine Learning (p. 2) (Khoury College of Computer Sciences)
- Statistical Theory and Modeling (p. 2) (College of Science)

## Experiential Courses

Code	Title	Hours
Complete 2 semester hours from the following (courses may be repeated):		2
MATH 6910	Master's Project	
PHTH 6880	Statistical Consultancy	

**Co-op (Optional)**

Code	Title	Hours
<b>Co-op Preparation</b>		
MATH 6000	Professional Development for Co-op	0
<b>Co-op Work Experience</b>		
<i>Statistical Machine Learning Concentration Students</i>		
Statistical machine learning students may take either course.		
<i>Biostatistics Concentration Students</i>		
HLTH 6964	Co-op Work Experience	0
<i>Statistical Theory and Modeling Concentration Students</i>		
MATH 6964	Co-op Work Experience	0

**Program Credit/GPA Requirements**

31–32 total semester hours required

Minimum 3.000 GPA required

**BIostatistics Concentration (Bouvé College of Health Sciences)**

Code	Title	Hours
Complete 12 semester hours from the following:		12
PHTH 5350	Using SAS in Public Health Research	
PHTH 6440	Advanced Methods in Biostatistics	
PHTH 6802	Causal Inference 2	
PHTH 6810	Survival Analysis	
PHTH 6820	Design and Analysis of Clinical Trials	

**Statistical Machine Learning Concentration (Khoury College of Computer Sciences)**

Code	Title	Hours
CS 5100	Foundations of Artificial Intelligence	4
CS 6140	Machine Learning	4
DS 5110	Introduction to Data Management and Processing	4

**Statistical Theory and Modeling Concentration (College of Science)**

Code	Title	Hours
Complete 12 semester hours from the following:		12
MATH 7339	Machine Learning and Statistical Learning Theory 2	
MATH 7340	Statistics for Bioinformatics	
MATH 7341	Probability 2	
MATH 7342	Mathematical Statistics	
MATH 7343	Applied Statistics	
MATH 7344	Regression, ANOVA, and Design	