BIOSTATISTICS, MS

The Master of Science in Biostatistics program provides an innovative curriculum to meet a range of professional needs and interests. The program trains students in study design, appropriate use of statistical and computational techniques, and interpretation of data analysis results arising from public health and biomedical research. Students learn both classical and modern statistical methods and apply their statistical skills and knowledge to solve "big data" problems. They have the opportunity to work with faculty on cutting edge research projects, such as discovering genetic causes of common diseases, developing statistical algorithms to monitor treatment efficacy, and reducing medical costs through electronic health record.

Please email applyph@uwm.edu to learn more about the MS in Biostatistics degree.

Admission Requirements

Application Deadlines

Application deadlines vary by program, please review the application deadline chart (http://uwm.edu/graduateschool/program-deadlines/) for specific programs. Other important dates and deadlines can be found by using the One Stop calendars (https://uwm.edu/onestop/dates-and-deadlines/).

Admission

1. An applicant must meet Graduate School requirements plus the following program requirements to be considered for admission to the program. These materials will be considered in a holistic admissions process with special attention to ensure a diverse student body.
   a. Three letters of recommendation from persons familiar with the applicant's academic experience and potential for graduate work in biostatistics.
   b. CV or resume.
   c. Address the following two Short Essay questions, limiting responses to no more than 500 words (approximately 250 words per question):
      - Describe how your professional, volunteer, and educational background has led you to seek a Master's of Science in Biostatistics.
      - How will an MS in Biostatistics help you reach your personal and professional goals?
   d. International applicants must also meet admission standards set and monitored by UWM's Center for International Education.
   e. **All applicants** must use SOPHAS (https://sophas.org/) to apply. When applying applicants must select the Master's of Science in Biostatistics.

Credits and Courses

The Master of Science in Biostatistics is a two-year program, preparing graduates to be effective collaborators in many settings, including the biomedical industry, academia, and public service at all levels of national and international government. Students will be trained to lead the design and data analysis of health research studies both in applied and academic settings. Coursework focuses on applied biostatistical methods, statistical consulting, computing, and the intersection of public health and statistical research. Students must complete 39 graduate credits beyond the bachelor's degree, plus an additional 3 credits dedicated toward thesis writing and research, for a total of 42 credits. Completion of a high-quality master thesis based on original research is a key indicator of the student's capacity to integrate and apply various biostatistical methods and public health knowledge in real world problems.

Code	Title	Credits
Required Coursework		
PH 701	Public Health Principles and Practice	3
PH 702	Introduction to Biostatistics	3
PH 704	Principles and Methods of Epidemiology	3
PH 711	Intermediate Biostatistics	3
PH 712	Probability and Statistical Inference [1]	3
PH 715	Applied Categorical Data	3
PH 716	Applied Survival Analysis	3
PH 717	Applied Longitudinal Data Analysis	3
PH 718	Data Management and Visualization in R	3
PH 724	Data Analysis & Scientific Communication Incorporating Use of Generative AI	3
PH 895	Applied Biostatistics Research Project	3
Subject Matter S Electives		**6**
Choose two:		
COMPSCI 708	Scientific Computing	
COMPSCI 711	Introduction to Machine Learning	
ED PSY 823	Structural Equation Modeling	
ED PSY 832	Theory of Hierarchical Linear Modeling	
PH 714	Statistical Genetics and Genetic Epidemiology	
PH 721	Introduction to Translational Bioinformatics	
PH 722	An Introduction to Bayesian Statistics	
PH 723	Design, Conduct and Analysis of Clinical Trials	
PH 812	Statistical Learning & Data Mining	
PH 818	Statistical Computing	
Public Health & Biology Electives [2]		**3**
Choose one:		
BIO SCI 490	Molecular Genetics	
PH 703	Environmental Health Sciences	
PH 705	Principles of Public Health Policy and Administration	
PH 706	Perspectives on Community & Behavioral Health	
Total Credits		**42**

[1] Or other elective.
[2] Other courses may be approved.

Additional Requirements

Applied Research Project

Near the end of their programs, students will consult with their academic advisor to identify a Biostatistics Track faculty member to be their

master's applied research project advisor for the independent study project. Advising may be by their assigned advisor or a different member of the Biostatistics Track faculty. Every student must meet with the designated advisor to discuss the specified project topic and review the data set to be analyzed no later than the start of the semester in which the student plans to graduate. The student also prepares a draft timeline for completing the project and describes expected outcomes. The applied research project paper should include basic background on the issue or problem with a literature review, specific aims and hypotheses, analysis methods, results, discussion, and public health implications. Once the project paper has been completed, the student will submit it to the faculty advisor for review and approval. The student will present the project in a session that is attended by graduating MS students and their advisors, held at the end of the graduation semester.

Time Limit

The student must complete all degree requirements within 5 years of initial enrollment.

Biostatistics MS Learning Outcomes

Master of Science students in Biostatistics can expect to:

1. Perform all responsibilities of a statistician in collaborative research; in particular: design studies, manage and analyze data and interpret findings from a variety of biomedical, clinical or public health experimental and observational studies.
2. Communicate statistical information effectively with individuals with varying degrees of statistical knowledge through written and oral presentations.
3. Use statistical, bioinformatic and other computing software to organize, analyze, and visualize data.
4. Review and critique statistical methods and interpretation of results in published research studies, presentations, or reports.
5. Understand and implement modern statistical approaches emerging in the literature to improve biomedical and public health.