PUBLIC HEALTH, PHD: BIOSTATISTICS

Related Certificate

- Interprofessional Graduate Certificate in Public and Population Health (https://catalog.uwm.edu/public-health/public-population-health-graduate-certificate/)

The Biostatistics doctoral program is designed to train students in the development of techniques, methods and tools to conduct public health research using rigorous statistical, bioinformatics and general quantitative methods.

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

Applicants to the PhD program in Public Health with a concentration in Biostatistics should have completed academic programs that facilitated development of solid analytical skills. Applicable baccalaureate programs include mathematics, statistics, computer science, and engineering. Baccalaureate degrees in related fields will be considered. A minimum undergraduate grade point average of 3.00 (A=4.00) is required. Applicants from diverse backgrounds are encouraged to apply. Each application will be evaluated individually primarily on the basis of academic achievement, although relevant work experience will also be considered.

Applicants to the PhD program in Public Health with a concentration in Community and Behavioral Health Promotion should have completed academic programs that facilitated development of solid analytical and communication skills. Applicable baccalaureate programs include those in the social and behavioral sciences, health and health-related sciences, and biological sciences. Baccalaureate degrees in related fields will be considered. At least one statistics course is preferred for admission. A minimum undergraduate grade point average of 3.00 (A=4.00) is preferred. While a completed master's degree in public health or the social and behavioral sciences is encouraged, a master's degree is not a prerequisite for admission. For those applicants without a master's degree in a relevant field, most successful candidates will have work, research and/or volunteer experiences that contribute to career development in community health and health promotion. Demonstrated communication and analytic skills are required. Applicants from diverse backgrounds with a strong interest in community health and health promotion are encouraged to apply. Each application will be evaluated individually on the basis of four key areas:

1. Academic record/achievement.
2. Work, research, and/or community experience.
3. Commitment/interest/awareness of public health and community health promotion.
4. Matching interest with current Community and Behavioral Promotion Health faculty.

Graduate Record Examination (GRE) scores from the general test (verbal, quantitative, analytical writing) are required of all applicants. Submitted test scores must be from a test taken within 5 years of the date of application. While there is not a minimum GRE score requirement, strong quantitative, verbal and writing skills are critical to successfully completing the program.

Students must meet UWM Graduate School admission requirements. For international applicants whose native language is not English, the UW-Milwaukee Center for International Education Website provides English Language Proficiency Requirements including required TOEFL or IELTS scores. Students who attended an international university must also pay an additional fee for evaluation of international transcripts.

In addition, a personal statement, and at least three letters of recommendation from individuals familiar with the applicant's scholarship, research achievements, and/or academic potential are required for the application. The letters of recommendation should address the candidate's potential for achievement in a graduate program from an academic as well as personal (e.g., commitment, integrity, ethical) standpoint. At least one letter must be from a university faculty member.

A select group of the most qualified candidates will be invited to participate in an interview process. In-person or internet-facilitated interviews (Skype, etc.) will be required for finalist candidates prior to admission.

Applicants may be admitted with course deficiencies at the discretion of the Zilber College of Public Health Graduate Program Committee. The student is expected to rectify these course deficiencies with a grade of B or better within three enrolled semesters. The academic program unit will monitor deficiencies. No course credits earned in making up deficiencies may be counted as program credits required for the degree. For students entering with an advanced degree, the Admissions Committee can grant credit for relevant coursework at its discretion, but at least half of the graduate credits required for the PhD must be completed at UW-Milwaukee in doctoral status in accordance with Graduate School policy. Thesis, dissertation, and research credits must be completed at UW-Milwaukee.

Reapplication

A student who receives the Master of Public Heath degree must formally reapply to the Zilber College of Public Health to gain admission to the PhD program in Public Health before continuing studies toward the PhD.

Credits and Courses

Biostatistics Concentration

Minimum degree requirement is 60 graduate credits beyond the bachelor's degree (plus an additional 9 credits dedicated to dissertation writing and research), at least 35 of which must be earned in residence at UWM. The student, in consultation with the major professor, must create a plan of study and submit to the Biostatistics Faculty by the end of the first year. Minimum course requirements for all work requires approximately two to three full years of study.

Code	Title	Credits
Required Core PhD Courses		
PH 704	Principles and Methods of Epidemiology	3
PH 711	Intermediate Biostatistics	3

PH 801	Seminar in Public Health Research	3
PH 819	Social and Environmental Justice in Public Health	3
Required Methods Courses		
MATH 783	Introduction to Probability Models (not both)	3
or MATH 883	Theory of Probability	
MTHSTAT 871	Mathematical Statistics I	3
MTHSTAT 872	Mathematical Statistics II	3
PH 718	Data Management and Visualization in R	3
PH 813	Practice of Biostatistical Consulting	3
PH 818	Statistical Computing	3
PH 911	Generalized Linear Models (T)	3
Research		**9**
PH 990	Research and Dissertation	
Electives (see table below)		**27**
Total Credits		**69**

Electives

Code	Title	Credits
BIO SCI 490	Molecular Genetics	3
COMPSCI 708	Scientific Computing	3
COMPSCI 711	Introduction to Machine Learning	3
MATH 884	Stochastic Calculus and Applications	3
MTHSTAT 564	Time Series Analysis	3
MTHSTAT 565	Nonparametric Statistics	3
MTHSTAT 869	Advanced Topics in Mathematical Statistics:	3
PH 714	Statistical Genetics and Genetic Epidemiology	3
PH 715	Applied Categorical Data	3
PH 716	Applied Survival Analysis	3
PH 717	Applied Longitudinal Data Analysis	3
PH 720	Special Topics in Biostatistics:	1-3
PH 721	Introduction to Translational Bioinformatics	3
PH 723	Design, Conduct and Analysis of Clinical Trials	3
PH 758	Social Epidemiology	3
PH 762	Environmental Epidemiology	3
PH 768	Cancer Epidemiology	3
PH 769	Critical Perspectives on Nutritional Epidemiology and the Food System	3
PH 811	Causal Inference	3
PH 812	Statistical Learning & Data Mining	3

Other courses as approved by advisor.

Additional Requirements

Major Professor as Advisor

The student must have a major professor to advise and supervise the student's studies as specified in Graduate School regulations. The entering student is assigned an advisor/major professor at admission based on fit and focus. The major professor serves as the student's research mentor and will guide the student in course selection, program planning, and research design. Students may change their advisor/major professor if the fit and focus change over time. Such changes will need approval of the graduate program committee. The major professor must have graduate faculty status.

Residence

The student must meet minimum Graduate School residence requirements.

Preliminary Exam Process

The preliminary exams must be successfully completed within five years of initial enrollment in the Ph.D. program.

Students must successfully complete a preliminary examination process before formally achieving dissertator status. When the student is sufficiently prepared, a doctoral preliminary examination to determine the student's knowledge and achievement is taken. The exam evaluates the student's general knowledge of mathematical statistics, and general biostatistical and quantitative methods. Students must pass this examination to continue in the program. With permission of the examination committee, the student may repeat this examination once within one year. After successful completion of the qualifying process, the student will concentrate on the development of the dissertation.

Time Limit

All degree requirements must be completed within ten years from the date of initial enrollment in the doctoral program.

Public Health PhD: Biostatistics Learning Outcomes

Doctoral students in the Biostatistics Concentration can expect to:

1. Develop new statistical methodologies to solve problems in biomedical, clinical, public health or other fields.
2. Contribute to the body of knowledge in the field of biostatistics by writing and successfully submitting manuscripts for publication in a peer-reviewed journal.
3. 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.
4. Communicate statistical information effectively with individuals with varying degrees of statistical knowledge through written and oral presentations.
5. Use statistical, bioinformatic and other computing software to organize, analyze and visualize data.
6. Review and critique statistical methods and interpretation of results in published research studies, presentations or reports.
7. Demonstrate solid theoretical knowledge necessary for the development and study of new statistical methods.
8. Understand and implement modern statistical approaches emerging in the literature to improve biomedical and public health.

PhD Core Learning Outcomes

Doctoral students in all public health programs can expect to:

1. Formulate and test a hypothesis using basic statistical methods.
2. Apply statistical inference to guide research decision-making relevant to public health problem and issues.
3. Evaluate *critically* scientific literature and identify how epidemiological and population health data can be used to answer research questions and inform program development and policy decisions aimed at promoting health equity.
4. Demonstrate critical thinking skills necessary for formulating research questions, identifying theory to frame research questions, and identify and employ appropriate methodologies for addressing a public health research question.
5. Apply social and environmental justice framework when asking and addressing research questions impacting the public's health.