

EPIDEMIOLOGY, PHD

The PhD program in epidemiology prepares graduates for many career paths, including academia, non-governmental organizations, and public service at all levels of local, national, and international government. Faculty in epidemiology have a broad range of interests in health equity, chronic disease, cancer, nutrition, epidemiologic methods, and environmental epidemiology. Through rigorous theoretical and methodological training, students learn to conduct independent research that examines the distribution and determinants of health, and to translate their findings to public health policy and strategies to promote population health. The program encourages applicants from diverse backgrounds who have a clearly communicated interest in epidemiology and in promoting health equity.

This program also meets requirements outlined by the national Council on Education for Public Health (CEPH).

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 must meet Graduate School requirements plus these departmental requirements to be considered for admission to the program:

1. Submission of scores from the Graduate Record Examination (GRE), 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.
2. Three letters of recommendation are required. At least one letter must be from a university faculty member.

Recommended:

- Applicants should have an earned bachelor's degree in any field with a cumulative undergraduate GPA of 3.0 or higher.
- A completed Master's degree in Epidemiology, public health or the social sciences is encouraged, but not required.
- At least one undergraduate mathematics or statistics course and one biological sciences course with a 3.0 is preferred.

Reapplication

A student who receives the Master of Public Health 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

The curriculum consists of 75 credits to degree completion beyond the bachelor's degree – 66 credits of didactic coursework and 9 credits toward dissertation writing and research. Students will take 24 credits of coursework to introduce them to the principles of Epidemiology, Biostatistics, public health policy and community engagement. They will take 6 credits of 's' elective coursework in subject matter areas, 6 credits of coursework in more advanced analytic methods, and 3 credits of an elective in an area that aligns with their research interests. They

will also take 9 credits of advanced coursework in both theoretical and applied epidemiology, in addition to 6 credits in more advanced policy analysis and translation of epidemiologic findings to policy interventions. Additionally, students will take 12 credits of PhD-level coursework in research ethics, community engagement, and a seminar in current issues in epidemiology. Students may apply previous graduate course work towards didactic credits, contingent on assessment of course equivalencies, in accordance with UW-Milwaukee policies.

| Code | Title | Credits |
|---|---|----------|
| Required Core PhD Courses | | |
| PH 704 | Principles and Methods of Epidemiology | 3 |
| PH 759 | Intro to Regression for Understanding the SDOH | 3 |
| PH 801 | Seminar in Public Health Research | 3 |
| PH 819 | Social and Environmental Justice in Public Health | 3 |
| EPI PhD Required Courses | | |
| PH 700 | Structures of Inequality and Population Health | 3 |
| PH 702 | Introduction to Biostatistics | 3 |
| PH 705 | Principles of Public Health Policy and Administration | 3 |
| PH 758 | Social Epidemiology | 3 |
| PH 761 | Epidemiology Field Methods | 3 |
| PH 763 | Epidemiology for Equity | 3 |
| PH 779 | Public Health Policymaking and Policy Analysis | 3 |
| PH 804 | Advanced Epidemiology | 3 |
| PH 823 | Applied Analysis of Binary Outcomes in Public Health Research | 3 |
| PH 864 | Research Ethics in Epidemiology and Public Health | 3 |
| PH 870 | Epidemiology in Health Policy and Advocacy | 3 |
| PH 904 | Survey of Analytic Methods for Epidemiology | 3 |
| PH 960 | Core Doctoral Seminar in Epidemiology | 3 |
| Research | | 9 |
| PH 990 | Research and Dissertation | |
| Required Epidemiology Subject Matter "S" Elective | | |
| Select two courses from the following: | | 6 |
| PH 762 | Environmental Epidemiology | |
| PH 768 | Cancer Epidemiology | |
| PH 769 | Critical Perspectives on Nutritional Epidemiology and the Food System | |
| PH 865 | Critical Methodologies for Health Equity Research | |
| PH 868 | Epidemiologic Links Between Infectious and Chronic Disease | |
| Analytic Methods Electives | | |
| Select two courses from the following; other classes as approved: | | 6 |
| ED PSY 823 | Structural Equation Modeling | |
| ED PSY 832 | Theory of Hierarchical Linear Modeling | |
| GEOG 525 | Geographic Information Science | |

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| PH 712 | Probability and Statistical Inference | |
| PH 714 | Statistical Genetics and Genetic Epidemiology | |
| PH 715 | Applied Categorical Data | |
| PH 716 | Applied Survival Analysis | |
| PH 717 | Applied Longitudinal Data Analysis | |
| PH 718 | Data Management and Visualization in R | |
| PH 729 | Survey Research Methods in Public Health | |
| PH 776 | Qualitative Approaches in Public Health Policy | |
| SOCIOL 982 | Advanced Quantitative Analysis | |
| Other Electives | | |
| Select one course from the following; other classes as approved: | | 3 |
| PH 727 | Program Planning & Implementation in Public Health | |
| PH 728 | Program Evaluation in Public Health | |
| PH 784 | Social and Economic Policy as Health Policy | |
| PH 808 | Writing a Federal Grant in the Public Health Sciences | |
| PH 820 | Maternal and Child Health Foundations, Policy and Practice | |
| PH 826 | Principles of Community Intervention Research | |
| PH 831 | Community Engagement and Participatory Research Approaches in Public Health | |
| Total Credits | | 75 |

Note: Students may apply previous graduate course work towards didactic PhD credits, contingent on assessment of course equivalencies, in accordance with UW-Milwaukee policies.

Additional Requirements

Major Professor as Advisor

As specified in Graduate School regulations, each student must have a major professor to advise and supervise their studies. During the application process, students will be asked to describe the research areas they are primarily interested in and identify faculty with whom they may potentially have shared research interests. 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 complete 8 to 12 graduate credits in each of two consecutive semesters, or 6 or more graduate credits in each of three consecutive semesters, exclusive of summer sessions. Residence requirements cannot be met at the master's level.

Preliminary Examination

Students must pass a PhD Preliminary Examination before advancement to PhD candidacy (i.e., dissertator status). The exam will consist of a single take-home exam in which students provide written answers (about 20-25 double-spaced pages) to a series of questions in reference to select epidemiologic research articles. Students will have one week (typically Monday to Monday) to complete the exam. The Doctoral Preliminary Examination Committee will select the research articles and create the exam. The questions will assess several PhD program competencies and will require students to integrate content related to 1) epidemiologic concepts and methods, 2) data analysis methods and applications to epidemiologic research, 3) applications of theory, social and environmental justice, health equity, and community engagement to epidemiologic research, and 4) policy implications of epidemiologic research. The examining committee will grade the exam and assign either a pass, conditional pass, or fail. For a conditional pass, the examining committee will determine options for remediation including but not limited to an oral presentation or re-write of certain questions. At the discretion of the examining committee, a student who fails the preliminary exam may be allowed one additional attempt with all or part of the examination.

Dissertation Proposal

The student, in consultation with the Major Professor, will select members to form a PhD Advisory Committee. See the Zilber College of Public Health Graduate Student Handbook and the Graduate School Doctoral Requirements page for more information on the doctoral committee. The dissertation research plan should include an abstract, background, outline of specific aims and hypotheses, (articulated as three distinct but related research questions), preliminary findings (if applicable), research methods proposed, public health significance of the proposed research and references. The composition of the dissertation committee must be in compliance with the rules and regulations of the Graduate School. The candidate then submits a written dissertation plan to be reviewed and formally approved by the dissertation advisory committee. The research plan must clearly outline the student's obligation for completing an original piece of work of sufficient quality, as determined by the committee. The review and approval process for the dissertation research plan will include a formal presentation to the committee.

Dissertation Defense

Upon approval of the dissertation proposal, students will proceed with an original and significant research investigation under the supervision of their major professor, culminating in a written dissertation.

The dissertator must, as the final step toward the degree, pass an oral examination in defense of the dissertation. The dissertation defense will be publicly announced and open to the academic community. Once the defense is completed, students will be encouraged to revise their dissertation and submit it for publication.

Once the committee has formally approved the dissertation document and the oral defense, and the Chair of the appropriate program has certified completion of all requirements, the candidate is awarded the Ph.D. in Public Health.

Time Limit

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

Epidemiology PhD Learning Outcomes

Doctoral students in Epidemiology can expect to:

1. Integrate knowledge regarding biological, behavioral, cultural, and sociopolitical mechanisms within historical contexts operating at multiple levels of causation to shape hypotheses regarding population health and health equity.
2. Critically evaluate epidemiologic theories of disease distribution and epidemiologic frameworks of causation.
3. Apply theories across multiple disciplines to frame and interpret epidemiologic research with attention to relevant policy and practice implications.
4. Critically appraise the scientific literature to identify strengths and limitations of existing methodological approaches in the field of epidemiology.
5. Design and conduct independent, interdisciplinary epidemiologic research using appropriate qualitative and/or quantitative methods and demonstrating knowledge of theory, study design, sources of bias, and other limitations to causal inference.
6. Explain the principles and methods of conducting community-engaged epidemiologic research to promote population health and health equity.
7. Develop self-reflexive and other skills for justice-oriented, ethical epidemiologic research and practice.
8. Communicate, orally and in writing, epidemiologic concepts, methods, and research findings.
9. Translate epidemiologic findings into policy recommendations and advocacy strategies that promote population health and health equity.

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.