

# PUBLIC HEALTH, MPH: BIOSTATISTICS

The Biostatistics track builds on the classic Public Health Biostatistics skill and knowledge base and takes advantage of special knowledge of its faculty in the areas of genetics, bioinformatics, network analysis, causal inference, and big data science. Students have the opportunity to learn and apply statistical genetics in the context of complex disease study, high throughout computing used in "big" data science, applications in evidence-based patient-centered outcome studies, and population-based epidemiological studies. Courses include topics and material such as interpretation of personalized and evidence-based medicine in the context of public health; basic understanding of genetics and epigenetics; general "omic" approaches and concepts; as well as classic Biostatistics topics such as Survival and Categorical data analysis.

## Related Certificate

- Interprofessional Graduate Certificate in Public and Population Health (<http://uwm.edu/graduateschool/interprofessional-graduate-certificate-in-public-and-population-health/>)

The Zilber School of Public Health (SPH) offers a Master of Public Health (MPH), a PhD in Public Health with a Concentration in Community and Behavioral Health Promotion, a PhD in Public Health with a Concentration in Biostatistics, a PhD in Environmental Health Sciences, and a PhD in Epidemiology.

## Master of Public Health

The Master of Public Health offered by the Zilber SPH is a professional master's degree program with five distinct tracks of study. The MPH program provides students with a broad understanding of public health practice and allows specialization in Biostatistics, Community and Behavioral Health Promotion, Environmental Health Sciences, Epidemiology, or Public Health Policy and Administration.

Like most MPH programs, the Zilber SPH's program imparts knowledge and skills in each of these core disciplines in public health, helping prepare all students to analyze information and consider solutions to public health problems using a social justice lens at the community, institutional, and societal levels. Courses have been designed to teach program- and track-level competencies as defined by Zilber SPH faculty. Program-level competencies reflect key public health skills including systems thinking, ethics, analytical methods, communications/informatics, diversity/culture, leadership, and professionalism. In addition, students engage in a specific track of study, gaining deeper competency in one of the five areas. Upon graduation students are prepared for positions in a range of population health settings and/or for doctoral-level study.

## 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

An applicant must meet Graduate School requirements as well as the desired track of study requirements. The following steps must be met to be considered for admission to the MPH Program. These materials will be considered in a holistic admissions process with special attention to ensure a diverse student body.

1. Three letters of recommendation from persons familiar with the applicant's academic experience and potential for graduate work in public health.
2. CV or Resume.
3. 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 degree in public health.
  - How will your desired track of study help you reach your personal and professional goals in public health?
4. International applicants must also meet admission standards set and monitored by UWM's Center for International Education.
5. MPH applicants must use SOPHAS (<https://sophas.org/>) to apply. Applicants must select their track to which they are applying: Biostatistics, Community and Behavioral Health Promotion, Environmental Health Sciences, Epidemiology, or Public Health Policy.
6. Tracks may have additional admission requirements, which can be found here (<https://uwm.edu/publichealth/students/future/admission/>).

## Credits and Courses

All students enrolled in the MPH program take a common set of core classes designed to give basic skills and knowledge of public health concepts. The core curriculum consists of at least 24-25 credit hours, including four credits for the Field Experience (3 credits) and Leadership in Public Health (1 credit) courses and a two-credit capstone seminar. In addition to the common core, students complete the required coursework in one of five specialization tracks: Biostatistics (46 credits), Community and Behavioral Health Promotion (48-49 credits), Environmental Health Sciences (45 credits), Epidemiology (49 credits), or Public Health Policy (48 credits). Students must maintain a cumulative GPA of 3.0 or better in order to progress through the program.

### MPH Required Common Core Courses (24-25 credits)

Code	Title	Credits
PH 702	Introduction to Biostatistics	3
PH 703	Environmental Health Sciences	3
PH 704	Principles and Methods of Epidemiology	3
PH 705	Principles of Public Health Policy and Administration	3
PH 706	Perspectives on Community & Behavioral Health	3
PH 708	Health Systems and Population Health	3
PH 733	Overview of Qualitative Methods for Public Health <sup>1</sup>	1
PH 790	Field Experience in Public Health (See following section for details) <sup>2</sup>	3
PH 791	Leadership in Public Health	1

PH 800	Capstone in Public Health (See following section for details) <sup>3</sup>	2
--------	--	---

<sup>1</sup> Required for students in the Biostatistics, Environmental Health Sciences and Epidemiology Tracks. Community and Behavioral Health Promotion Track students who take a qualitative methods course and Public Health Policy Track students would be exempt.

<sup>2</sup> Satisfactory/Unsatisfactory; may be taken for 1, 2, or 3 credits in a given semester. A total of 3 credits is required.

<sup>3</sup> Satisfactory/Unsatisfactory; completed in the final semester of study.

## Field Experience

The Field Experience enables students to apply knowledge and skills learned in the classroom to public health problems in a community context. Students work with their Faculty Advisor and school staff to identify a placement that matches their public health interests and career goals. Possible placement settings include a local health department, state health department, non-profit agency, hospital system, or research institute. The experience is a mentored placement engaging both a faculty advisor and a site preceptor. Students complete at least two products as agreed upon with the site preceptor. This course is offered in the summer, fall, and spring semesters.

Students complete three credits (80 contact hours per one credit, 240 hours total) with the organization. The specified competencies, scope of work, and final products for the organization are defined in a learning agreement, which is signed by the student, preceptor, faculty advisor and course instructor. Students must demonstrate attainment of at least five competencies, three of which must be Council on Education for Public Health (CEPH) MPH Foundational Competencies (see Field Experience Handbook), and two of which are identified from the track competency sets.

Two CEPH MPH Foundational Competencies are required of all students:

- **16.** Apply leadership and/or management principles to address a relevant issue (may include creating a vision, empowering others, fostering collaboration, and guiding decision making).
- **19.** Communicate audience-appropriate (i.e., non-academic, non-peer audience) public health content, both in writing and through oral presentation.

Students choose their third Foundational Competency.

The one-credit Leadership in Public Health course is designed to give students the opportunity to apply three specific CEPH MPH Foundational Competencies related to the Field Experience. The Field Experience setting provides students with opportunities to integrate these competencies through their projects, observe professionals in their organizations and the community, and learn important skills in these areas. The required competencies are:

- **16.** Apply leadership and/or management principles to address a relevant issue (may include creating a vision, empowering others, fostering collaboration, and guiding decision making).
- **17.** Apply negotiation and mediation skills to address organizational or community challenges (among parties with conflicting interests and/or different desired outcomes).
- **21.** Integrate perspectives from other sectors and/or professions to promote and advance population health (direct engagement between

student[s] and individual[s] in a sector or profession other than public health to complete a task or solve a problem).

Students fulfill these competencies with readings and through a series of activities including case studies or scenarios/role playing exercises. Assessments for the leadership, negotiation and interprofessional team competencies include participation in the sessions and written papers. The Leadership in Public Health course is offered in the fall and spring semesters. All four Field Experience and Leadership course credits may be taken in one semester or spread out over two semesters.

## Capstone

The capstone requires students to integrate the knowledge and skills learned in the classroom, Field Experience, and/or lab into some aspect of professional public health practice. Students work with their Faculty Advisor to write a project proposal the semester prior to the capstone reflecting the student's interests and career goals. Students then implement the project during their final semester of the program. The project has both written paper and oral presentation components. In addition, students attend several weekly seminars. The capstone project is an opportunity for students to synthesize and demonstrate public health competencies.

## Biostatistics Concentration

Code	Title	Credits
<b>Required Courses</b>		
PH 711	Intermediate Biostatistics	3
PH 712	Probability and Statistical Inference	3
PH 718	Data Management and Visualization in R	3
<b>Electives (see table below)</b>		<b>12</b>
Total Credits		21

## Electives

Code	Title	Credits
<b>Select four of the following courses:</b>		<b>12</b>
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

Other courses as approved by advisor.

## Additional Requirements

### Faculty Advisor

Each student will be assigned a track-specific Faculty Advisor during Orientation week preceding the first semester. Faculty Advisors assist the student in the development of an individual Plan of Study designed to advance the career goals of the student and be consistent with the track curriculum. The Advisor plays an important role in connecting the Field Experience, Capstone, and career goals for each student. If deemed necessary, any student can petition to the Zilber Office of Academic and Student Affairs for a reassignment of Faculty Advisor. Program

track faculty will make every effort to accommodate requests to give all students opportunities for success in the MPH Program.

**Thesis**

Not required. See capstone for similar culminating experience.

**Comprehensive Examination**

Not required. See capstone for similar culminating experience.

**Time Limit**

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