Epidemiology

DEGREES OFFERED:
- Master of Public Health
- Doctor of Philosophy

MPH IN EPIDEMIOLOGY
The Master of Public Health (MPH) degree is designed for those who wish to acquire knowledge and skills necessary for epidemiologic practice and research. This degree will be appropriate for persons interested in a career studying the relationship of risk factors to a variety of disease, injury, and other health-related states.

WVU MPH graduates in Epidemiology are qualified to work and provide leadership in state, federal, and global health agencies (e.g. Centers for Disease Control and Prevention [CDC], The National Institute for Occupational Safety and Health [NIOSH]); hospitals; infection control departments in multiple industries; academic health centers and other healthcare organizations; research institutions, foundations; insurance and managed care organizations; and pharmaceutical and biotechnology companies.

PH.D. IN PUBLIC HEALTH SCIENCES (EPIDEMIOLOGY MAJOR)
The Doctor of Philosophy (Ph.D.) in Public Health Sciences, Epidemiology Major, prepares students for careers in research, teaching, and consulting. Students develop research and teaching skills in epidemiology through coursework and practice opportunities. The curriculum provides rigorous and comprehensive training in epidemiologic methods for clinical and population-based research including study design, statistical analysis and interpretation of results, as well as research areas of focus for epidemiologic research including chronic diseases, infectious diseases, injury, and gene by environment interactions. The program’s etiologic orientation is based on the premise that knowledge of genetic, physiologic, behavioral, and environmental factors contribute to understanding the underlying causes of complex human diseases needed to develop and evaluate effective preventive and treatment measures. The first years of the program emphasize research and statistical methods complemented by theoretical and process-oriented coursework relevant to epidemiology. The latter years will largely be dedicated to dissertation research.

Ph.D. graduates in the Epidemiology Major work as faculty members in academic institutions; scientists in research centers, e.g., the National Institutes of Health (NIH), Centers for Disease Control and Prevention (CDC) or the pharmaceutical industry; or may assume leadership positions in state or federal health agencies (such as CDC, Food and Drug Administration [FDA], and the Environmental Protection Agency [EPA]).

FACULTY

CHAIR
- Thomas C. Hulsey, Professor - MSPH, Sc.D.
  (The Johns Hopkins University)

PROFESSORS
- Gregory A. Hand - Ph.D. (University of Texas Southwestern Medical Center at Dallas)
- Sarah Knox - Ph.D. (University of Stockholm)
- Ian R. H. Rockett - Ph.D. (Brown University)
- Gordon Smith - MB, ChB (MD equivalent), MPH (University of Otago Medical School, Harvard School of Public Health)

ASSOCIATE PROFESSORS
- Kimberly Innes - Ph.D. (Cornell University)
- R. David Parker - Ph.D. (University of South Carolina)

ASSISTANT PROFESSORS
- Baqiyyah Conway - Ph.D. (University of Pittsburgh)

ADJUNCT ASSOCIATE PROFESSOR
- Robert Bossarte - Ph.D. (University of Notre Dame)

ADJUNCT ASSISTANT PROFESSOR
- Miguella Mark-Cares - Ph.D. (Cornell University)
  Office of Epidemiology and Prevention Services, WV DHHS

ADMISSION GUIDELINES FOR MPH
- A baccalaureate degree from an accredited college or university (required)
• Preferred minimum GPA of 3.0
• Preferred minimum GRE scores of 150 (verbal), 155 (quantitative), and 3.5 (analytical writing)
• Personal Statement
• Three academic letters of recommendation
• TOEFL scores (minimum 550 paper-based, 213 computer-based, 80 internet-based) **International students only**

If you are ready to apply to West Virginia University School of Public Health, the admissions team is here to assist you. Our School of Public Health is CEPH accredited, and we participate in SOPHAS (Schools of Public Health Application Service). **Our MPH Admissions process is a two-step process.** All MPH applications must be submitted through the national SOPHAS service and applicants must also submit a WVU Graduate application.

In addition to the general application, applicants must submit to SOPHAS a statement of purpose and objectives, official GRE test scores, three letters of reference, a current resume/curriculum vitae, and all university transcripts. SOPHAS requires original transcripts from ALL U.S. institutions attended! (Even Study Abroad) Please see each Major’s website for additional application requirements.

Applicants must indicate their first choice of MPH major, and may also indicate a second choice. A maximum of two choices is allowed. (SOPHAS fee $120.00 – one choice; SOPHAS fee $165.00 – two choices)

- E-submit your application as soon as the applicant entered information is complete. Do NOT wait for SOPHAS to receive transcripts, recommendations or test scores
- Plan Ahead! Allow up to 4 weeks for SOPHAS to verify grades, process and mail your application to your designated institutions after your documents have been received.
- SOPHAS grants fee waivers based upon financial need for Peace Corps Volunteers, McNair Scholars, Gates Millennium Scholars Program, AmeriCorps, U.S. and International applicants.

Applications that are complete will then be reviewed by the department. Students will receive a communication from the WVU School of Public Health regarding their recommendation for acceptance and instructions to complete the WVU Graduate application and pay the $60.00 WVU application fee.

**Important:** When sending GRE scores for consideration for admission at WVU use the GRE WVU School of Public Health College code: 0157. This is the code that MUST be used, otherwise your GRE score will not be reported to SOPHAS and your application will be incomplete and therefore will not be reviewed for an admissions decision. [There are different codes for other programs at West Virginia University]

**ADMISSION GUIDELINES FOR THE PH.D. IN PUBLIC HEALTH SCIENCES (EPIDEMIOLOGY MAJOR)**

**Degree Requirements**

- A Master’s degree in Public Health or a closely related field is strongly preferred. Exceptional applicants with a Bachelor’s degree in a relevant field may also be considered.
- Minimum GPA of 3.0 is required, 3.5 is preferred.

**Minimum Test Scores**

- The following GRE scores are preferred: Verbal 150; Quantitative 155; and Writing 3.5.
- WVU requires international students to submit TOEFL scores. Preferred scores are as follows: 550 on the paper-based test; 213 on the computer-based test; and 80 on the internet-based test.

**Application Procedure**

Applying to the Ph.D. program is a two-step process in which prospective students first submit an application through the national SOPHAS service. If you are accepted into the Ph.D. program by the School, the next step is for you to complete a WVU Graduate Application (https://graduateadmissions.wvu.edu/).

The SOPHAS application requires:

- Official test scores
- Official transcripts from all US institutions attended
- A Personal Statement
- 3 Letters of Recommendation
- Current CV/Resume

Applicants must indicate their first choice of Major and may indicate a second choice (you are allowed a maximum of two choices).
There is a $120 SOPHAS application fee. However, SOPHAS grants fee waivers based upon financial need for McNair Scholars, Gates Millennium Scholars, as well as for AmeriCorps and Peace Corps Volunteers.

TIPS for completing the SOPHAS application:

- APPLY EARLY! Allow up to 4 weeks for SOPHAS to verify your transcripts and test scores and send them to the Universities to which you have applied. Your application may not be reviewed if it does not contain verified transcripts and test scores.
- When submitting your GRE scores, be sure to use the college code 0157 for the WVU School of Public Health. This code MUST be used so that verified scores are sent by SOPHAS to the WVU School of Public Health for review.
- Submit your application once you have provided the required information. DO NOT wait for SOPHAS to receive transcripts, recommendations or test scores prior to submitting your application.

Go to https://sophas.liaisoncas.com/applicant-ux/#/login to complete the SOPHAS application.

Personal Statement

The Personal Statement is a critical piece of the application. The content of the Statement and the applicant’s writing skills will be evaluated in the admissions decision. The Statement should address the following in no more than 1000 words:

- What is it about Public Health that interests you?
- What is it about your selected major, specifically, that interests you?
- What are your career goals?
- What topics or areas of research do you wish to pursue and why? If you have identified a potential dissertation topic, briefly describe that as well.
- Which faculty members in the SPH do you see as being potential mentors to help you succeed in your area of interest?

Applicants should also include any additional information about their interests, background, prior experience, or special circumstances that may be helpful to the SPH Admissions Committee.

Letters of Recommendation

Three letters of recommendation are required. At least two of these should be from people who can attest to your academic abilities.

Deadlines

The deadline by which you must submit your completed SOPHAS application is 5:00pm (EST) December 31. Applications received after this deadline will not be considered. All admissions are for the Fall semester. We do not admit students into the PhD program in the Spring or Summer semesters.

Review process

All completed and verified SOPHAS applications are first reviewed by the Admissions Committees of the major to which an applicant has applied (EPID, OEHS, or SBHS). Candidates that are recommended for admission at this level, are put forth to the SPH Doctoral Admissions Committee, which makes the final decisions on admissions and funding.

Advanced Standing for Applicants with a Master’s Degree

Students who enter the Ph.D. program with an MPH or approved Master’s degree are eligible for Advanced Standing. This allows students to complete an abbreviated course of study that takes between 2 and 3 years to complete, depending on the student’s past course work and current interests.

Master of Public Health

Epidemiology Major Competencies

- Derive and assess basic epidemiologic frequencies and association.
- Compare and contrast epidemiologic study designs.
- Weigh a public health problem in terms of magnitude, person, time, and place.
- Measure occurrences of incidence, morbidity, and mortality.
- Summarize concepts of causation.
- Derive appropriate inferences from epidemiologic data.
- Analyze data using statistical software to fit epidemiologic regressions, generate coefficients, and explain interpretations properly.
- Analyze data for confounding, and generate a proper interpretation.
- Appraise data for effect modification, and generate a proper interpretation.
- Evaluate data for dose-response.
- Evaluate basic multivariable statistical techniques commonly used in clinical and public health settings.
- Manage standard statistical software to efficiently manage data structures.
- Integrate and synthesize epidemiologic knowledge, skills and abilities as demonstrated in the context of a culminating experience.

**MAJOR REQUIREMENTS**

**MPH Core Curriculum:**

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<thead>
<tr>
<th>Course</th>
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<th>Hours</th>
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<td>BIOS 601</td>
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<td>BIOS 602</td>
<td>Applied Biostatistics Lab</td>
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<td>EPID 611</td>
<td>Concepts and Methods of Epidemiology</td>
<td>3</td>
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<td>HPML 601</td>
<td>Foundations of Health Policy</td>
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<td>OEHS 601</td>
<td>Environmental Health</td>
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<tr>
<td>PUBH 696</td>
<td>Graduate Seminar</td>
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<tr>
<td>SBHS 601</td>
<td>Social and Behavioral Theory</td>
<td>3</td>
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**MPH Concentration Curriculum:**

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<td>3</td>
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<tr>
<td>BIOS 611</td>
<td>Data Management and Reporting</td>
<td>3</td>
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<td>EPID 612</td>
<td>Applied Epidemiology for Public Health</td>
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<td>Graduate Seminar</td>
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**Practice based/Culminating Experiences:**

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<td>MPH Practice-Based Experience</td>
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<tr>
<td>EPID 629</td>
<td>Epidemiology Capstone</td>
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**Electives:**

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<td>Categorical Data Analysis HS</td>
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<td>EPID 625</td>
<td>Principles of Clinical Trials</td>
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<td>EPID 760</td>
<td>Demography and Transitions</td>
<td>3</td>
</tr>
<tr>
<td>EPID 763</td>
<td>Injury Epidemiology</td>
<td>3</td>
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<tr>
<td>EPID 764</td>
<td>Mind-body Medicine</td>
<td>3</td>
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<td>EPID 765</td>
<td>Epidemiology of Transportation Safety</td>
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<td>EPID 766</td>
<td>Physical Activity Epidemiology</td>
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<td>OEHS 622</td>
<td>Public Health Toxicology</td>
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<td>OEHS 732</td>
<td>Occupational Injury Prevention</td>
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<td>Gene X Environmental Interactions and Chronic Diseases</td>
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<td>PUBH 586</td>
<td>Public Mental Health</td>
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<td>PUBH 605</td>
<td>Introduction to Global Public Health</td>
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<td>SBHS 660</td>
<td>Survey Research Methods</td>
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Total Hours: 42

**SUGGESTED PLAN OF STUDY**

**First Year**

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<td>3 OEHS 601</td>
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<td>BIOS 602</td>
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<td>1 SBHS 601</td>
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<tr>
<td>BIOS 611</td>
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<td>3 HPML 601</td>
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<td>3 EPID 612</td>
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<td>PUBH 696</td>
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**Second Year**

<table>
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<th>Hours</th>
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<tr>
<td>EPID 696</td>
<td></td>
<td>1 EPID 629</td>
<td>3</td>
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<tr>
<td>Elective</td>
<td></td>
<td>3 BIOS 603</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>3 PUBH 622 (or Elective)</td>
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The MPH degree will be awarded based on successful completion of all academic requirements and demonstrated achievement of competencies. The department chair using a faculty panel will review competency performance evidence and based on the evidence reviewed, determine if the student has achieved the expected competencies. If a determination is made that competencies have not been achieved, the department chair will inform the student what must be accomplished to demonstrate achievement and therefore be recommended for awarding of the MPH degree. This may include taking additional courses.

Doctor of Philosophy

Overview

The Doctor of Philosophy (PhD) in Epidemiology prepares students for a career in research, teaching, practice, or consulting. Students develop research and teaching skills in epidemiology through coursework and practice based opportunities. The curriculum provides rigorous and comprehensive training in epidemiologic methods for clinical and population based research including study design, statistical analysis, and interpretation of results, as well as research in multiple content areas.

Upon completion of the PhD degree in Epidemiology, graduates should be able to:

• Design investigations of acute and chronic conditions, as well as other adverse health outcomes in targeted populations.
• Analyze and evaluate data from epidemiologic investigations, and disease and injury surveillance systems.
• Evaluate health behaviors and outcomes in populations by such variables as age, sex, race/ethnicity, socioeconomic status, and disability.
• Critically evaluate results of epidemiologic studies, including study design, analysis results, and conclusions.
• Prepare written and oral reports and presentations to effectively communicate to professional audiences, policymakers, and the general public.
• Prepare research proposals for extramural peer reviewed funding.
• Promote and model ethical conduct in epidemiologic practice.
• Bring epidemiologic perspectives to the development and analysis of public health policies.

Graduates of the PhD in Epidemiology program typically work as faculty members in academic institutions, scientists in research centers, such as the National Institutes of Health (NIH), Centers for Disease Control and Prevention (CDC) or the pharmaceutical industry, or may assume leadership positions in state, or federal health agencies (such as CDC, Food and Drug Administration [FDA], and the Environmental Protection Agency [EPA]).

Admission Guidelines for PhD:

• A Master’s degree in epidemiology or public health is recommended but not required, or closely related field from an accredited college or university (minimum GPA of 3.0).
• GRE minimum score of 305 (total).  GRE preferred scores of the 60th percentile for verbal, 80th percentile for quantitative, and 60th percentile for analytic writing.
• A completed PhD application, including a Statement of Purpose.
• Three academic and/or professional letters of recommendation.
• TOEFL scores (minimum standards set by the University) for International students only.

If a students have not taken departmentally approved graduate coursework prior to admission to the PhD program, they will be required to successfully complete a minimum of 80 graduate hours beyond the bachelor’s degree. If a student has previously completed a departmentally approved MPH or MS degree prior to admission to the PhD program, they will be required to successfully complete a minimum of 58 graduate hours beyond the master’s degree. If a student has previously completed some graduate credit, they may transfer a maximum of 12 graduate hours of coursework into the PhD program.

Statement of Purpose

The essay is a critical piece of the admissions process. We will evaluate both the content of the essay and your writing skills in considering your application. All applicants should write an essay of 1000 words or less. In this essay, please address the following questions:

What is it about epidemiology that appeals to you?

What area of interest do you wish to study and why?

Which faculty do you foresee working with on your content?
Applicants should include any additional information about their interests, prior background or special circumstances which may be helpful to the Admissions Committee.

**Required Courses for a PhD in Epidemiology**

The first two years of the program emphasize research and statistical methods complemented by theoretical and process oriented coursework relevant to Epidemiology. The last two years will largely be dedicated to dissertation research. The program takes approximately three years for a student with an MPH in epidemiology and four years for a student without an MPH degree in epidemiology.

**Major requirements**

Below are the minimum requirements for the EPID PhD in Public Health Sciences for students without an MPH. Some students entering the program with a departmentally approved Master's degree may be eligible to complete an abbreviated version of the curriculum.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>EPID 611</td>
<td>Concepts and Methods of Epidemiology</td>
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<td>PUBH 659</td>
<td>Public Health Foundations</td>
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<tr>
<td>EPID 711</td>
<td>Methodological Issues in Design &amp; Analysis of Cohort Studies</td>
<td>3</td>
</tr>
<tr>
<td>EPID 722</td>
<td>Field Placement</td>
<td>3</td>
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<tr>
<td>EPID 712</td>
<td>Quantitative Methods in Epidemiology</td>
<td>3</td>
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**Graduate Seminar (taken 3 times)**

- EPID 796 Graduate Seminar 3
- BIOS Elective 500 level or higher 3
- BIOS Elective 500 level or higher 3
- BIOS 601 Applied Biostatistics 1 3
- BIOS 602 Applied Biostatistics Lab 1
- BIOS 603 Applied Biostatistics 2 3
- BIOS 604 Applied Biostatistics 3 3
- BIOS 610 Intermediate Biostatistics 4
- BIOS 611 Data Management and Reporting 3
- C&I 789 Teaching in Higher Education 3

**Research**

- EPID 797 Research 19
- EPID 790 Teaching Practicum 2

**Electives - Select from the following:**

- EPID 740 Gene X Environmental Interactions and Chronic Diseases
- EPID 745 Epigenetics and Systems Biology
- EPID 760 Demography and Transitions
- EPID 763 Injury Epidemiology
- EPID 764 Mind-body Medicine
- EPID 765 Epidemiology of Transportation Safety
- EPID 766 Physical Activity Epidemiology

**Electives**

Courses may be selected from among the Department, School, or University's many course offerings. This will allow students to develop an area of focus. These courses will be discussed and approved with the faculty advisor.

**Teaching Practicum**
Students will spend one semester in a mentored relationship with a faculty member, assisting with the implementation of a course. This is a 2 credit, 90 hour experience. Students will help with lecture preparation, giving three lectures and tutoring. Grading assignments or exams should be kept minimum. These may be graduate or undergraduate level courses.

Qualifying Exam

The Qualifying Examination is a requirement for completion of the PhD program coursework and to advance to candidacy. Successful completion of the examination signifies competence in epidemiology and indicates readiness to engage in independent research. The Written Qualifying Exam will focus on methodology (core courses in years 1 and 2). It is not a discussion of the student’s research project/interests or the advisor’s research program. The Oral Exam Component consists of a defense of student’s answers to the written exam and includes additional questions that further test the student’s understanding of key concepts in epidemiology. The oral defense of the written exam must be attempted within two academic weeks of completing the written exam. Note: Students are not eligible to begin their dissertation, or sign up for dissertation credits, until they have successfully completed both components of the qualifying examination.

The Qualifying Examination should, to the extent possible, be scheduled by the end of the second year in the Program when most of the course work is completed.

A Qualifying Exam Committee (minimum of 3 faculty with a primary appointment in epidemiology) will be assigned by the Epidemiology Department Chair at the beginning of each academic year to oversee the development and scoring of the exam. A designation of PASS or FAIL will be assigned upon completion. To pass, a student must receive a score of pass from the majority of faculty members on the committee. If a student does not PASS, s/he may not proceed to the Dissertation Proposal Defense and must retake the Qualifying Exam, with the approval of the Graduate Director, no later than six (6) months after the notification of failure. If a student receives a grade of fail upon retaking the Qualifying Exam, s/he will not advance to candidacy and will be dismissed from the Program.

Dissertation Committee

It is incumbent upon students to form a dissertation committee. This committee will oversee the student’s dissertation research. Below are the requirements for the composition of this committee:

- Committees must consist of no fewer than four members
- At least one member must be from a department other than EPID
- At least three members must be affiliated with the SPH
- The majority of members must have regular graduate faculty membership. No more than one person may be a nonmember of the graduate faculty.
- The Committee Chair must have their primary appointment in EPID at the associate professor rank or higher, and hold regular graduate faculty status. Exceptions may be approved with agreement of the Graduate Director and Department Chair.
- Any changes in committee membership require approval of the dean or designee of the college or school.

Dissertation Format and Process

Students may choose to pursue a traditional dissertation format or the Three Journal Article (JAF). The decision of which format to use is based on a discussion with the dissertation chair. The Dissertation Proposal Defense will be administered no later than six months after passing the Qualifying Exam. The Dissertation Proposal Defense will consist of a written proposal of the student’s anticipated dissertation research followed by an oral defense that will not exceed two (2) hours in length. The format of the written proposal must adhere to the form of a current National Pre Doctoral Award Application (i.e., National Institutes of Health, National Science Foundation, etc.).

The proposal must be submitted to the Dissertation Committee at least two (2) weeks prior to the scheduled Research Proposal Defense. The student’s Committee chair (advisor) is to be present at the defense. Upon conclusion of the Research Proposal Defense, the Committee will discuss it and the student will immediately invited back to meet with the Committee to discuss his/her performance and, will be provided with a detailed list of strengths and weaknesses to be addressed in a subsequent meeting (to be held within two (2) weeks of the Defense, and will be considered as a Dissertation Committee meeting).

The Dissertation Committee will assign a grade of pass or fail to the student’s performance immediately following the oral defense. To receive a pass, there can be only one unfavorable vote from the committee. If a student earns a grade of fail on the Research Proposal Defense, s/he will be given clear guidelines as to the necessary changes, and may redo the Defense no later than six (6) months after the failure. If a student again receives a grade of fail, s/he will not progress and dismissed from the Program.

In order to graduate, the student must have one first author publication published or in press (either from the dissertation or TAF). After the thesis or dissertation committee has tentatively approved the student’s written thesis or dissertation, the final defense can be scheduled. A student cannot be considered as having satisfactorily passed their defense if there is more than one unfavorable vote among members of the committee.

University Doctoral Degree Requirements

For further details on WVU’s requirements for Doctoral programs please visit the following website: http://catalog.wvu.edu/graduate/advisingcoursesdegrees/degree_regulations/.
Credit Transfer

For further information on the SPH’s credit transfer policy, please visit the following website:

http://publichealth.hsc.wvu.edu/students/student-policies/graduate-course-transfer-policy/

SUGGESTED PLAN OF STUDY FOR STUDENTS WITHOUT AN MPH (80 CREDITS)

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<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
<th>Summer</th>
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<th>Hours</th>
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Total credit hours: 80

Students with an MPH may be able to waive EPID 611, 612, 722; BIOS 601, 602, 603, 611; PUBH 659 (total of 22 credits).

Major Learning Goals

EPIDEMIOLOGY

MPH Major Competencies

- Derive and assess basic epidemiologic frequencies and association.
- Compare and contrast epidemiologic study designs.
- Weigh a public health problem in terms of magnitude, person, time, and place.
- Measure occurrences of incidence, morbidity, and mortality.
- Summarize concepts of causation.
- Derive appropriate inferences from epidemiologic data.
- Analyze data using statistical software to fit epidemiologic regressions, generate coefficients, and explain interpretations properly.
- Analyze data for confounding, and generate a proper interpretation.
- Appraise data for effect modification, and generate a proper interpretation.
- Evaluate data for dose-response.
- Evaluate basic multivariable statistical techniques commonly used in clinical and public health settings.
- Manage standard statistical software to efficiently manage data structures.
- Integrate and synthesize epidemiologic knowledge, skills and abilities as demonstrated in the context of a culminating experience.
DOCTOR OF PHILOSOPHY

Program Competencies

• Develop effective strategies for teaching in higher education
• Review and synthesize pertinent literature and formulate focused research questions that address identified knowledge gaps
• Design and conduct original research that uniquely contributes to the public health scientific knowledge
• Disseminate research findings through appropriate peer-reviewed publications and presentations, and to other public health community audiences

Major Competencies

• Design investigations of acute and chronic conditions, as well as other adverse health outcomes in targeted populations.
• Analyze and evaluate data from epidemiologic investigations, and disease and injury surveillance systems.
• Evaluate health behaviors and outcomes in populations by such variables as age, sex, race/ethnicity, socioeconomic status, and disability.
• Critically evaluate results of epidemiologic studies, including study design, analysis results, and conclusions.
• Prepare written and oral reports and presentations to effectively communicate to professional audiences, policymakers, and the general public.
• Prepare research proposals for extramural peer-reviewed funding.
• Promote and model ethical conduct in epidemiologic practice.
• Bring epidemiologic perspectives to the development and analysis of public health policies.