Occupational and Environmental Health Sciences

Degrees Offered:
• Master of Public Health
• Doctor of Philosophy

MPH IN OCCUPATIONAL AND ENVIRONMENTAL HEALTH SCIENCES
The MPH degree in occupational and environmental health sciences provides students with the practical skills needed to solve occupational and environmental health problems. Students will focus on understanding occupational and environmental processes and their effects on humankind and developing the skills needed to assess and address their health consequences.

The MPH degree typically takes two years to complete. A minimum of forty-three credit hours are required for the MPH in occupational and environmental health sciences. Students complete 17 credit hours of School of Public Health core courses, 15 credit hours of departmental required courses (including the Capstone), one 6 credit Practice-based Experience and 5 credit hours of electives. The MPH curriculum is designed so that students have a broad exposure to the core disciplines in public health and an introduction to occupational and environmental sciences in the first year of the program. In the second year (typically), students complete the required Practice-based Experience, which is designed to place students in settings in which they can apply their newly acquired knowledge and skills and continue to learn from professionals in their field while working on current, relevant public health problems.

Upon completion of the MPH in occupational and environmental health sciences, students will be prepared to either continue their graduate education at the doctoral level or begin a career as consultants, managers, and leaders in public health practice, research settings, government, or industry, addressing such issues as environmental pollution related to air, water, and waste, occupational health hazards, and work-related injury. The MPH degree is ideal for recent college graduates or early to mid-career public health professionals seeking to develop or advance their current careers.

PH.D. IN PUBLIC HEALTH SCIENCES (OCCUPATIONAL AND ENVIRONMENTAL HEALTH SCIENCES MAJOR)
The PhD in Public Health Sciences, Occupational and Environmental Health Major, is a degree for scientist-practitioners in the area of prevention of premature mortality, morbidity and disability resulting from occupational and environmental exposures, communicable and chronic disease, and injury. This degree emphasizes both evidence-based primary prevention of disease and injury, as well as health promotion research and practice. Students completing this degree will have the necessary theoretical knowledge and critical understanding of occupational and environmental health problems, including analytical and methodological research skills, to investigate, evaluate and find solutions to public health challenges. To this end, students should expect rigorous course work and training typical of a Ph.D. program.

The Department of Occupational and Environmental Sciences has a close collaboration with the National Institute of Occupational Safety and Health (NIOSH), which shares our Health Sciences campus in Morgantown. Collaborating NIOSH faculty add important enrichment and mentorship potential for the interested student.

FACULTY

INTERIM CHAIR
• Michael McCawley - PhD (New York University)

PROFESSORS
• Alan Ducatman - MD, MSc (City University of New York)
• Lan Guo - PhD (West Virginia University)
• Chris Martin - MD (Memorial University of Newfoundland)

ASSOCIATE PROFESSOR
• Anna Allen - MPH, MD (WVU)
• Douglas Myers - ScD, MA (Univ. of MA Lowell)
• Kimberly Rauscher - ScD, MA (Univ. of MA Lowell)
• Charles L. Werntz III - DO (Kirkville College of Osteopathic Medicine)
• Robert Gerbo - MD (Kirkville College of Osteopathic Medicine))
• Chuanfang Jin - MD (Shanzi Medical University)

ASSISTANT PROFESSORS
• Rachel T. Abraham - MD, MPH (Emory University)
ADMISSION GUIDELINES FOR THE MPH IN OEHS

The minimum requirements for admission are as follows:

- Baccalaureate degree from an accredited college or university with a preferred overall GPA of 3.0.
- GRE scores of 150 Verbal, 147 Quantitative, and 3.0 Analytical Writing.
- *International Students Only:* TOEFL scores: minimum 550 paper-based or 213 computer-based.

MPH Applicants (Fall Admissions Only)

If you are ready to apply to the West Virginia University School of Public Health, the admissions team is here to assist you. Our School of Public Health is CEPH (http://www.ceph.org) accredited, and we participate in SOPHAS (http://www.sophas.org) (Schools of Public Health Application Service). Our MPH Admissions is a two-step process. All 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. There is a $120 SOPHAS application fee. Applicants must indicate their first choice of MPH major, and may also indicate a second choice. A maximum of two choices is allowed.

- 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.

*Important:* When sending GRE scores for consideration for admission to WVU, please use the WVU School of Public Health College GRE code: 0157. This code **MUST** be used, otherwise your GRE score will not be reported to SOPHAS and your application will be incomplete. Incomplete applications cannot be reviewed for an admissions decision. [Each program at West Virginia University has a specific code. Be sure to enter 0157 for the School of Public Health]

Completed applications will 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 WVU application fee.

Admission decisions to the West Virginia School of Public Health are conducted in two rounds. Fully completed SOPHAS applications received by **April 15** will be considered first. Incomplete applications and new fully completed applications received by June 1 will be considered for those degree programs/concentrations that have openings after the April 15 decisions. Applicants are strongly encouraged to submit their completed applications by the April 15 deadline in order to be considered during the first round.

ADMISSION GUIDELINES FOR THE PH.D. IN PUBLIC HEALTH SCIENCES (OCCUPATIONAL AND ENVIRONMENTAL HEALTH SCIENCES 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 PhD 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 PhD 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 PhD 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

Occupational and Environmental Health Sciences Major Competencies

• Compile the environmental and socio-economic elements of sustaining a healthy environment and societal well-being as an environmental practitioner.
• Summarize specific human health hazards in various environmental media and systems.
• Assess methodologies of primary and secondary prevention for environmental health issues.
• Appraise existing occupational and environmental hazards.
• Assess the potential for problems in an occupational or environmental setting.
• Discern appropriate methods for the control of occupational hazards.
• Assess the basic principles and applications within the science of toxicology.
• Evaluate the different classes of environmental toxic substances and stressors that have known effects on individuals or population.
• Appraise the different routes of toxic exposure, metabolic pathways, mechanisms of distribution within the body, and elimination processes.
• Evaluate the effects of different toxicants and stressors in terms of target effect on the cellular, organ system, and whole body-levels.
• Summarize the epidemiology of occupational injury which includes the extent, nature, and mechanisms of occupational injury as well as their distribution across occupations and industries.
• Contrast the strengths and weaknesses of the occupational injury surveillance systems used in the US.
• Discern the individual, organizational, structural, and societal factors that contribute to occupational injury.
• Propose effective interventions that can help prevent occupational injury.
• Apply MPH occupational and environmental health sciences competencies in a practice based experience.
• Integrate and synthesize MPH occupational and environmental health sciences competencies in the context of a culminating experience.

MAJOR REQUIREMENTS

MPH Core Curriculum:
BIOS 601 Applied Biostatistics 1 3
BIOS 602 Applied Biostatistics Lab 1
EPID 601 Public Health Epidemiology 3
HPML 601 Foundations of Health Policy 3
OEHS 601 Environmental Health 3
SBHS 601 Social and Behavioral Theory 3
PUBH 696 Graduate Seminar 1

Concentration Curriculum:
OEHS 610 Environmental Practice 3
OEHS 620 Occupational and Environmental Hazard Assessment 4
OEHS 622 Public Health Toxicology 3
OEHS 623 Occupational Injury Prevention 3
OEHS 696 Graduate Seminar 1
PUBH 622 MPH Practice-Based Experience 6
OEHS 629 Capstone 1

Electives
OEHS 630 Public Health Biology 3
OEHS 665 Worksite Evaluation 3
OEHS 691 Advanced Topics 1

Total Hours 43

SUGGESTED PLAN OF STUDY

First Year
Fall Hours Spring Hours
BIOS 601 3 HPML 601 3
BIOS 602 1 SBHS 601 3
EPID 601 3 OEHS 610 3
OEHS 601 3 OEHS 622 3
PUBH 696 1 OEHS 696 1

11 13

Second Year
Fall Hours Spring Hours
OEHS 620 4 OEHS 629 1
PRACTICE-BASED EXPERIENCE

Practice-based Experience: It is six credits, which translates to 360 hours of work, and has been designed to place students in occupational or environmental settings to further develop and apply their newly acquired knowledge and skills in a way that addresses real-world problems. The nature of the practice-based experience is dependent on the student and opportunities. An appropriate practice-based experience could include a local health department, a rural healthcare facility, an industrial plant, or an agency of the state or federal government.

The purpose of the practice-based experience is to provide experience in most, if not all, of the listed competencies for this degree. A primary focus of all these experiences is to provide skill building and practical experience in an environmental or occupational health setting. Development and application of analytical skills is emphasized; these skills may include a collection or data analysis of an exposure database, formulation of control measures, or oversight of public environmental activities.

With the guidance of a faculty mentor from the Department of Occupational and Environmental Health Sciences, as well as a preceptor at the location of the internship and the SPH Internship Coordinator, students will be expected to participate in a meaningful way. They will work with their academic team to identify a relevant problem and then develop and conduct an analysis and evaluation of that problem or acquire a new skill such as exposure assessment, on which they will be evaluated. Students will be required to present their findings to an appropriate audience of practice-based related professionals in a poster presentation.

CULMINATING EXPERIENCE/CAPSTONE

OEHS 629 Capstone is generally to be taken in the last semester of study. In the Capstone, students are required to demonstrate the ability to synthesize and integrate knowledge and competencies across the full breadth of the MPH-OEHS curriculum.

COMPETENCY ASSESSMENT

The MPH degree will be awarded based on successful completion of all academic requirements and demonstrated achievement of the competencies listed above. The OEHS department chair, with input from the OEHS faculty, will review competency performance evidence and 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 of what must be accomplished in order for him/her to demonstrate competency achievement and therefore be recommended for awarding of the MPH degree. This may include taking additional courses.

WORKSITE WELLNESS AREA OF EMPHASIS

Competencies include:

- Design needs and resource assessments relative to the implementation of a work-site wellness program
- Create and evaluate work-site wellness interventions
- Discern the individual, organizational, structural, and societal factors that contribute to health and safety in the workplace
- Derive the value of public health and wellness programs and policies to justify investment by business organizations

AREA OF EMPHASIS REQUIREMENTS

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<th>Course Title</th>
<th>Hours</th>
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<td>Worksite Wellness</td>
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<td>HPML 680</td>
<td>Performance and Economic Evaluation for Public Health</td>
<td>3</td>
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<tr>
<td>OEHS 623</td>
<td>Occupational Injury Prevention</td>
<td>3</td>
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<td>SBHS 633</td>
<td>Women and Violence</td>
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WORKSITE WELLNESS AREA OF EMPHASIS SUGGESTED PLAN OF STUDY

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<td>PUBH 622</td>
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<td>HPML 601</td>
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<td>BIOS 602</td>
<td>1 PUBH 696</td>
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<td>SBHS 601</td>
<td>3 SBHS 611 or 660</td>
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<td>SBHS 610</td>
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Second Year

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<th>Course Name</th>
<th>Hours Spring</th>
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<tr>
<td>SBHS 615 or 614</td>
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<td>OEHS 623</td>
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<tr>
<td>PUBH 536</td>
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<tr>
<td>SFHS 601</td>
<td>Social and Behavioral Theory</td>
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<td>PBHS 601</td>
<td>Foundations of Health Policy</td>
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<td>OEHS 610</td>
<td>Environmental Practice</td>
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<td>OEHS 620</td>
<td>Occupational and Environmental Hazard Assessment</td>
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<td>Public Health Toxicology</td>
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<td>Occupational Injury Prevention</td>
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<td>EPID 769</td>
<td>Occupational Epidemiology</td>
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<tr>
<td>OEHS 733</td>
<td>Organizational Theories of Injury and Disaster Prevention</td>
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<td>Graduate Seminar</td>
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<td>Graduate Seminar</td>
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<tr>
<td>BMS 700</td>
<td>Scientific Integrity</td>
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<tr>
<td>BMS 720</td>
<td>Scientific Writing</td>
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<td>OEHS 790</td>
<td>Teaching Practicum</td>
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<td>Electives</td>
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<td>2 Research Rotations (OEHS 797)</td>
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<td>Qualifying Examination - written and oral components</td>
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<td>Dissertation Proposal and its Defense</td>
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<td>Total Hours</td>
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Note: Students may elect to replace SBHS 601 & HPML 601 with PUBH 659 Foundations of Public Health, which is an overview course that covers concepts in both SBHS and HPML as well as the other SPH majors. Students who replace the two 601 courses with the PUBH 659 course, will need to complete an additional 3 credits.

Program Requirements for Students Entering with Advanced Standing
Students entering the OEHS PhD program with advanced standing will complete the minimum program requirements listed below. Additional courses may be needed depending on the student’s degree and prior coursework. Students with advanced standing will need to work with their advisor to determine their ultimate course of study.

BIOS 603  Applied Biostatistics 2  3
EPID 769  Occupational Epidemiology  3
OEHS 733  Organizational Theories of Injury and Disaster Prevention  3
OEHS 796  Graduate Seminar  1
OEHS 796  Graduate Seminar  1
BMS 700  Scientific Integrity  1
BMS 720  Scientific Writing  2
OEHS 790  Teaching Practicum  1
Electives  12
2 Research Rotations (OEHS 797)  2
Qualifying Examination - written and oral components
Dissertation Proposal and its Defense
Dissertation Defense (OEHS 797 - min credit number shown)  25
Dissertation Defense
Total Hours  54

ELECTIVES
Students will complete a minimum of twelve credit hours of electives during their PhD program. These may be selected from among the many offerings of the OEHS department, the SPH, or the university. The selection of these courses must be discussed with and approved by the student’s advisor.

TEACHING PRACTICUMS
Students will complete a 1 credit teaching practicum (OEHS 790) during which they will spend time in a mentored relationship with a faculty member, assisting with the administration and teaching of a course. These may be graduate or undergraduate level courses. Students who have a strong interest in teaching should also consider taking C&I 789 Teaching in Higher Education (3 credits). This is a general methods course involving instructional concepts and strategies for present/prospective faculty in higher education. Students without a strong interest in teaching may request a waiver of the teaching practicum requirement.

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 make-up of this committee:

- Committees must consist of no fewer than four members;
- At least three members must be affiliated with the School of Public Health
- At least two members must have their primary appointment in the OEHS department
- At least one member must be from a department other than the one in which the student is seeking a degree.
- The majority of members must have regular graduate faculty membership. No more than one person may be a nonmember of the graduate faculty.
- The chairperson of the committee must have a doctoral degree, be a faculty member of or affiliated with the SPH (NIOSH included), and hold regular graduate faculty status.
- Any changes in committee membership require approval of the dean or designee of the college or school.

QUALIFYING EXAM
The qualifying examination is the capstone experience for the OEHS PhD program. Successful completion of the examination signifies competence in the field of occupational and environmental health sciences and indicates readiness to engage in independent research. Following completion of the majority of the PhD coursework, students are then eligible to take the qualifying examination, which consists of two components, a written exam and an oral defense as follows:

Written exam: The written exam consists of questions related to occupational and environmental health sciences generally as well as those pertinent to the student’s research focus.

Oral defense: The oral 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 occupational and environmental health sciences and knowledge specific to the student’s research focus. 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.
RESEARCH

The research component of the OEHS PhD program consists of both a dissertation (25 credits, minimum) and completion of two research rotations (2 credits).

Research Rotations: Students will complete two research rotations (1 credit each) in which they will work with research faculty with similar interests to the student’s in order to identify potential mentors for their dissertation research. For students who have already identified a mentor, the research rotation requirements may be replaced by other credits.

Dissertation: Students will complete a dissertation in which they design and conduct an original work of research. First, students will develop a proposal for an original research project. This proposal will be presented and defended orally before the student’s dissertation committee. Upon successful completion of the proposal defense, students are admitted to PhD candidacy and may then complete their dissertation research. There are two options for the dissertation format, a traditional book format or a three Journal Article Format (JAF). The decision of which format to use is something that students should discuss with their committee chairperson. Regardless of the format selected, students must have a minimum of one first-authored publication based on their dissertation topic area, at least under review in a peer-reviewed journal before they can defend their dissertation. While the required publication may come from one of the student’s three dissertation articles if using the JAF, this is not mandatory. Upon completion of the written dissertation, the student will present and defend their work before the dissertation committee. Note: The dissertation defense is open to all members of the WVU community and the public.

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/.

PLAN OF STUDY

Upon matriculating into the PhD program, students should contact the OEHS PhD Program Director, or their advisor if already identified, to discuss the course requirements and to develop a plan of study (POS) to meet their individual needs. Below is a suggested POS with the minimum requirements for students entering the program with a BA/BS. Note: Research credits show below reflect the minimum requirements. Students may enroll in additional research credits as necessary to achieve the degree competencies.

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<th>First Year</th>
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<td>Second Year</td>
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<tr>
<td>Fall</td>
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<tr>
<td>OEHS 623</td>
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<td>OEHS 797 (Research Rotation)</td>
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WORKSITE WELLNESS AREA OF EMPHASIS

Competencies include:

- Design needs and resource assessments relative to the implementation of a work-site wellness program
- Create and evaluate work-site wellness interventions
- Discern the individual, organizational, structural, and societal factors that contribute to health and safety in the workplace
- Derive the value of public health and wellness programs and policies to justify investment by business organizations

AREA OF EMPHASIS REQUIREMENTS

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<tr>
<td>HPML 680</td>
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Total Hours: 12

WORKSITE WELLNESS AREA OF EMPHASIS SUGGESTED PLAN OF STUDY

First Year

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Total: 14

Second Year

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Total: 12

Total credit hours: 47

Major Learning Goals

OCCUPATIONAL AND ENVIRONMENTAL HEALTH SCIENCES

MPH Competencies for the OEHS Major

- Compile the environmental and socio-economic elements of sustaining a healthy environment and societal well-being as an environmental practitioner.
- Summarize specific human health hazards in various environmental media and systems.
- Assess methodologies of primary and secondary prevention for environmental health issues.
- Appraise existing occupational and environmental hazards.
- Assess the potential for problems in an occupational or environmental setting.
- Discern appropriate methods for the control of occupational hazards.
- Assess the basic principles and applications within the science of toxicology.
- Evaluate the different classes of environmental toxic substances and stressors that have known effects on individuals or population.
- Appraise the different routes of toxic exposure, metabolic pathways, mechanisms of distribution within the body, and elimination processes.
• Evaluate the effects of different toxicants and stressors in terms of target effect on the cellular, organ system, and whole body-levels.
• Summarize the epidemiology of occupational injury which includes the extent, nature, and mechanisms of occupational injury as well as their distribution across occupations and industries.
• Contrast the strengths and weaknesses of the occupational injury surveillance systems used in the US.
• Discern the individual, organizational, structural, and societal factors that contribute to occupational injury.
• Propose effective interventions that can help prevent occupational injury.
• Apply MPH occupational and environmental health sciences competencies in a practice based experience.
• Integrate and synthesize MPH occupational and environmental health sciences competencies 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

• Analyze issues and problems in occupational and environmental health and safety using critical evaluation, applied research methodology, and statistical methods
• Characterize the human health effects of major environmental and occupational hazards, both acute and chronic, including: air pollution, contamination of drinking water, and physical hazards
• Analyze sources, pathways, and routes of exposure to environmental and occupational hazards, identify populations at high risk of exposure, and communicate that risk effectively
• Create programs that protect the environment using proven technologies and novel approaches