
PhD in OCCUPATIONAL and ENVIRONMENTAL HEALTH

Occupational and Environmental Health scientists prevent disease and injuries related to occupational and environmental stressors and promote health among individuals and in populations through research, professional practice and teaching. The Department offers formal training in occupational and environmental health, with particular strength in the areas of the application of biomarkers of exposure, dose, and susceptibility; molecular, occupational and environmental epidemiology; and occupational and environmental policy and management. Additional student and post doctoral programs include a residency program in occupational and environmental medicine and occupational health nursing and degree programs with the Department of Epidemiology in occupational epidemiology.

The doctoral program in occupational and environmental health prepares students for academic careers in teaching and research. Students pursue excellence in scholarly creative research in the etiology, detection and (biologic) monitoring, diagnosis and prevention of human diseases of occupational and environmental origin. Research toward the PhD degree leads to an expanded understanding of one of the several domains of occupational and environmental health, including clinical and laboratory toxicology; development and validation of biomarkers; occupational, environmental, and molecular epidemiology; and biostatistics, population health management and health promotion, and intervention studies focused on disease prevention.

Occupational and environmental health faculty members are engaged in a wide range of research projects, primarily in human research studies utilizing epidemiological methods and often with a focus on disease etiology and causal pathways. The research of faculty advisors in the concentration includes particular strength in the central nervous system; peripheral nervous system; renal, musculoskeletal, pulmonary, and cancer outcomes. Research activities include a prominent focus on biomarkers and their

development, validation and demonstration of utility for prevention; development, validation and effectiveness of medical surveillance activities; occupational and environmental health policy; evaluation of the health effects of global environmental change; interaction between genetic factors and occupational and environmental exposures in causing disease; the impact of health conditions on productivity and ability to work; and causes, risk factors, diagnosis and treatment of occupational and environmental diseases and injuries.

Students in this program show an interest in human studies, biology, epidemiology, policy management, and social and built environments.

DIVISIONAL SEMINAR

In addition to attendance at formal courses, PhD students are expected to attend the weekly Divisional seminar which is generally held at the Bloomberg School at 12:00 noon on Mondays. Once a month this seminar is a NIOSH Education and Research Center (ERC) seminar which is also attended by students from the Division of Environmental Engineering and the Occupational Injury Epidemiology Program. Once a month this seminar is a Research in Progress seminar presented by either doctoral students or faculty.

JOURNAL CLUB AND GRAND ROUNDS

As occupational/environmental health professionals, it is important that divisional PhD students be current with the literature in the field. This involves not only reading, but discussing with peers and mentors the content and importance of what has been read. A monthly journal club held in conjunction with the Department of Epidemiology at 12:00 noon on Mondays provides the forum for this required activity. In addition, biweekly grand rounds in Occupational/Environmental Medicine, conducted by the occupational medicine residency program, examine occupational and environmental medicine issues, including clinical, epidemiologic, management, and policy issues. The Occupational Health Nursing Program also holds weekly seminars.

TRAINEE SUPPORT

The major source of support for pre- and post-doctoral students in the Division of Occupational and Environmental Health is the NIOSH Education and Research Center (ERC). This program funds selected students in the master's, doctoral, and medicine residency programs. Acceptance into the PhD program does not imply that funding in support of tuition or stipend is available. The availability of financial support must be pursued separately with the Division, Program, or Department.

COMPREHENSIVE WRITTEN EXAMINATION

The comprehensive written examination is taken before the end of the second year of the PhD program, and allows evaluation of the student's breadth and depth of knowledge in his/her discipline and relation fields. Written notification of the successful completion of the written comprehensive examination is sent to the Departmental Office of Educational Programs immediately following completion. This exam is generally administered once yearly—early summer of fall. The format is two three-hour sessions, including general and specific question components.

OCCUPATIONAL AND ENVIRONMENTAL HEALTH NURSING PROGRAM

This program, funded by the National Institute for Occupational Safety and Health (NIOSH) within the Johns Hopkins Education and Research Center, graduates nurses with MPH, MSN/MPH, PhD, and DrPH degrees in the field of occupational and environmental health.

MPH students are enrolled in the school-wide MPH program (11 months) and take additional courses with a focus on occupational and environmental health.

This program also collaborates with the Johns Hopkins School of Nursing to offer an MSN/MPH degree (18 months). Master's graduates hold upper level positions in local, state, and federal government agencies, military services, private sector, industry, and labor organizations that deal with occupational or environmental issues. The doctoral program, the first

in the world to offer nurses doctoral preparation in occupational and environmental health, addresses the need for nurses who are prepared to conduct research and to design interventions to prevent adverse effects of workplace and community exposures on human health. Doctoral graduates conduct research, teach at the university level, and manage occupational and environmental health programs.

Within each degree option, there are opportunities to incorporate coursework in specific areas of interest, such as disaster preparedness, worker health promotion, occupational injury prevention, and the use of biomarkers of exposure and susceptibility. In addition to an academic focus on nursing and environmental health, curriculum requirements include epidemiology, biostatistics, occupational and environmental health, injury prevention, management and policy, and toxicology as it relates to human health.

For program information, contact Dr. Sheila Fitzgerald (OEHN Program Director), sfitzger@jhsph.edu, 410-955-4082 or Dr. Jacqueline Agnew (ERC Director), jagnew@jhsph.edu, 410-955-4037.

OCCUPATIONAL MEDICINE RESIDENCY PROGRAM

As a preventive specialty administered by the American Board of Preventive Medicine, occupational and environmental medicine emphasizes both clinical skills and a broad comprehension of epidemiology, toxicology, administration, and biostatistical principles that can be applied to occupationally or environmentally exposed populations.

The Johns Hopkins Occupational Medicine Residency is a two-year program designed to prepare physicians to practice occupational and environmental medicine in a number of different settings, including corporate occupational medicine departments, regulatory agencies, occupational medicine clinics, or academic medical centers.

The first year of the program is the Master of Public Health degree. The second year includes rotations in industries, unions, regulatory agencies, and clinics that provide a broad and deep exposure to all aspects of occupational and environmental medicine practice. More detailed information is available on the Web (use the “Search” function to find occupational medicine programs in Maryland).

For more information on the program, contact Director Dr. Virginia Weaver, occmed@jhsph.edu, 410-955-3362 or Deputy Director Dr. Brian Schwartz, bschwartz@jhsph.edu, 410-955-4158.

Department of Environmental Health Sciences
PhD in Occupational and Environmental Health
Core Curriculum Requirements

Students should select from sections A-E as noted below.

A. Core Requirements

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|--|--|---------|
| 140.621 Statistical Methods in Public Health I | TTh 10:30-11:50 1 st term * | 4 units |
| 140.622 Statistical Methods in Public Health II | TTh 10:30-11:50 2 nd term * | 4 units |
| 140.623 Statistical Methods in Public Health III | TTh 10:30-11:50 3 rd term * | 4 units |
| 182.625 Principles of Occupational & Environmental Hygiene | TTh 1:30-3:20 2 nd term ** | 4 units |
| 187.610 Public Health Toxicology | WF 3:30-4:50 1 st term ** | 4 units |
| 188.680 Fundamentals of Occupational Health | TTh 3:30-4:50 1 st term ** | 3 units |
| 340.751 Epidemiologic Methods I | MWF 8:30-9:50 1 st term * | 5 units |
| 340.752 Epidemiologic Methods II | MWF 8:30-9:50 2 nd term * | 5 units |
| 340.753 Epidemiologic Methods III | MWF 8:30-9:50 3 rd term * | 5 units |

No required courses during Fourth Term. Note that Statistical Methods in Public Health IV (140.624) and Methodologic Challenges in Epidemiologic Research are highly recommended, especially for students doing epidemiologic research for the thesis. TTh 10:30-11:50 4 units.

* Check current schedule for lab times (<http://commprojects.jhsph.edu/courses>)

** Also offered via Internet.

B. Required Courses in Environmental Health

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|---|-------------------------------------|---------|
| 180.601 Environmental Health <i>OR</i> | MWF 1:30-3:20 summer | 5 units |
| 180.609 Principles of Environmental Health I <i>AND</i> | MW 1:30-3:20 1 st term | 4 units |
| 180.610 Principles of Environmental Health II | TTh 8:30-10:20 2 nd term | 4 units |

Note: 180.609 and 180.610 are highly recommended to meet this requirement.

C. Required Courses in Occupational and Environmental Health

In addition to required courses, at least FOUR of the following courses are also required, in either or both emphasis areas. Please note that other courses in EHS may be substituted at the discretion of the advisor.

Courses with a greater emphasis in occupational health

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|--|---|---------|
| 182.621 Introduction to Ergonomics | F 8:30-11:50 2 nd term | 4 units |
| 182.623 Occupational Safety and Health Management | M 1:30-3:50 3 rd term | 3 units |
| 182.631 Principles of Occupational Safety | F 1:30-3:20 1 st term | 2 units |
| 188.681 Occupational Health | M 8:30-11:50 <i>AND</i> W 8:30-4:50 4 th term | 5 units |
| 188.686 Clinical Environmental & Occupational Toxicology | WF 1:30-2:50 3 rd term | 3 units |
| 188.694 Advanced Topics in Occupational Health Nursing | T 9:00-11:50 4 th term | 3 units |

Courses with a greater emphasis in environmental health

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| 180.629 Environmental and Occupational Health Law and Policy | MW 10:00-11:50 3 rd term | 4 units |
| 180.611 The Global Environment and Public Health | TTh 8:30-10:20 4 th term | 4 units |
| 180.631 Environmental and Occupational Health Policy Seminar | TTh 1:30-2:50 4 th term | 3 units |
| 182.638 Water and Health | WF 8:30-10:20 4 th term | 4 units |
| 182.640 Food- and Water-Borne Diseases | TTh 1:30-2:50 3 rd term | 3 units |
| 183.641 The Health Effects of Indoor and Outdoor Air Pollution | TTh 1:30-2:50 4 th term | 3 units |

One specialty course credit will be given to students completing the four course Risk Sciences series
(*course numbers listed here*)

| | | |
|---|---------------------------------------|---------|
| 317.600 Introduction to the Risk Sciences & Public Policy | MW 5:00- 6:30 1 st term ** | 3 units |
| 317.605 Methods in Quantitative Risk Assessment | MW 5:00-6:30 3 rd term * | 4 units |
| 317.610 Risk Policy, Management & Communication | MW 5:00-6:30 2 nd term | 3 units |
| 317.615 Topics in Risk Assessment | M 5:00-6:30 4 th term | 2 units |

D. Required Courses in Epidemiology

In addition to required and specialty area courses, TWO of the following epidemiology courses are required:
(*other epidemiology courses may be substituted with the approval of the advisor*)

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| 180.640 Molecular Epidemiology & Biomarkers in Public Health | TTh 2:30-3:50 3 rd term | 4 units |
| 340.618 Occupational Epidemiology | TTh 1:30-2:50 4 th term | 4 units |
| 340.637 Environmental Epidemiology | TTh 1:30-2:20 3 rd term | 2 units |
| 340.664 Introduction to Genetic Epidemiology | TTh 8:30-10:20 1 st term ** | 4 units |
| 340.705 Advanced Seminar in Social Epidemiology | MW 10:00-11:50 4 th term | 3 units |

E. School Requirements

The following courses fulfill the School requirements for all research students. Doctoral students who have earned a MPH Degree within the last ten years are waived from the 550.865-866 requirements. In addition, all students are required to complete the Academic Ethics Module (on-line course), which is located at <http://apps1.jhsph.edu/academicethics/>. This module should be completed within two terms of matriculation and must be completed before graduating.

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|---|--|---------|
| 550.865 Public Health Perspectives on Research I | T 10:30-11:50 <i>OR</i> F 1:30-2:50 1 st term | 1 unit |
| 550.866 Public Health Perspectives on Research II | T 10:30-11:50 <i>OR</i> F 1:30-2:50 2 nd term | 1 unit |
| 306.665 Research Ethics and Integrity <i>or</i> | TTh 1:30-2:50 3 rd term | 3 units |
| 550.860 Research Ethics | Internet 2 nd term | 1 unit |
| Academic Ethics Module | Internet | |

* Check current schedule for lab times (<http://commprojects.jhsph.edu/courses>)

** Also offered via Internet.

Electives

In addition to the required courses, there is a wide variety of relevant elective courses available as listed in the catalog of the Bloomberg School. Specific course selections should be reviewed with the advisor.