

# OCCUPATIONAL AND ENVIRONMENTAL HYGIENE, MASTER OF SCIENCE

The Master of Science (MS) in Occupational and Environmental Hygiene (OEH) program is a professional degree designed for students interested in developing or advancing professional careers in occupational and environmental risk assessment and management. This program is part of the Department's NIOSH-sponsored Education and Research Center in Occupational Safety and Health. Graduates of the program are employed in consulting, private industry and/or government, and they are also prepared to pursue doctoral studies in environmental health sciences. The program may be undertaken on a full-time or part-time/online basis and both options confer the same degree. Students interested in pursuing the part-time/online program should refer to Engineering for Professionals for more information.

The Master of Science in Occupational and Environmental Hygiene degree program is accredited by the Applied and Natural Sciences Accreditation Commission of ABET (<https://www.abet.org/>).

## Program Educational Objectives

The MS OEH Educational Objectives focus on objectives that our graduates are expected to attain within a few years of graduation. The objectives were reviewed and approved by our external advisory committee on 2/21/2022 and are stated as follows:

The Program in Occupational and Environmental Hygiene educates students to think critically, communicate clearly, and collaborate effectively as they apply the fundamental scientific principles of industrial hygiene to environmental and workplace problems. We emphasize the importance of intellectual growth, professional ethics, and service to society.

The OEH Program has four broad educational objectives. Our efforts are focused on enabling students to:

1. Anticipate, recognize, evaluate, and control factors in the workplace and the environment that may cause illness, injury, or impairment;
2. Build a successful career and obtain professional certification using the comprehensive education and training received;
3. Integrate industrial hygiene techniques, biostatistics, epidemiology, management, and environmental health concepts into a broader occupational/environmental health practice; and
4. Pursue continuing education in research and professional practice of Occupational and Environmental Health.

## General Student Outcomes

Students graduating with a MS in Occupational and Environmental Hygiene will have demonstrated an ability to:

1. Identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline;
2. Formulate or design a system, process, procedure, or program to meet desired needs;
3. Develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions;

4. Communicate effectively with a range of audiences;
5. Understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts; and
6. Function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

## Program Outcomes

1. Understand physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and /or stressors with the human body;
2. Anticipate, recognize, evaluate, and control potentially hazardous agents, conditions, and practices in workplace settings;
3. Apply fundamental exposure assessment techniques (both qualitative and quantitative) in workplace settings;
4. Perform industrial hygiene data interpretation of new and existing data including statistical and epidemiological principles;
5. Apply appropriate business and managerial practices to workplace settings;
6. Understand, interpret, and apply occupational and environmental standards and regulations; and
7. Understand fundamental aspects of safety and environmental health.

Students will undertake an appropriate professional experience tailored to the needs of the individual student and complete an Independent Professional Project (IPP) and present the results of the IPP in written form and orally.

For students particularly interested in careers in occupational hygiene the program is accredited by the Applied and Natural Science Accreditation Commission (ANSAC) of the Accreditation Board for Engineering and Technology (ABET), and is designed to prepare students for the Certified Industrial Hygienist (CIH) examination administered by the American Board of Industrial Hygiene (ABIH). Training in the program covers principles of risk assessment and management in the workplace and in the general environment. Coursework includes toxicology, epidemiology, biostatistics, occupational health, occupational and environmental hygiene, air pollution, environmental sampling, exposure assessment, and program management, as well as risk assessment, risk management and risk communication.

## Students Seeking Additional Research/ Internship Opportunities

Additional laboratory and internship opportunities are assessed on a case-by-case basis and should be discussed with your advisor before starting any work. Students who would like credit for working in a faculty lab can register for 182.845. Students who would like credit for additional internship hours outside of JHU can enroll in 182.810. This is applicable both for domestic students and international students who need to meet visa requirements.

The curriculum for Occupational and Environmental Hygiene is housed at Bloomberg School of Public Health. Please note that the school schedules courses by term rather than semester.

## First Year Requirements

Code	Title	Credits
<b>First Term</b>		
PH.140.621	Statistical Methods in Public Health I	4
PH.340.721	Epidemiologic Inference in Public Health I	5
PH.187.610	Public Health Toxicology	4
PH.188.680	Fundamentals of Occupational Health	3
PH.182.845	EHE MS Special Studies and Research	1
<b>Second Term</b>		
PH.140.622	Statistical Methods in Public Health II	4
PH.182.621	Introduction to Ergonomics	4
PH.182.614	Environmental and Occupational Monitoring	5
PH.182.625	Principles of Occupational and Environmental Hygiene	4
PH.182.845	EHE MS Special Studies and Research	1
<b>Third Term</b>		
PH.140.623	Statistical Methods in Public Health III	4
PH.182.615	Airborne Particles	4
PH.182.623	Occupational Health Management	3
PH.182.613	Exposure Assessment Techniques for Health Risk Management	3
PH.182.845	EHE MS Special Studies and Research	1
Electives		
<b>Fourth Term</b>		
PH.180.628	Introduction To Environmental and Occupational Health Law	4
PH.305.615	Occupation Injury Prevention and Safety Policy and Practice	2
PH.188.681	Onsite Evaluation of Workplace and Occupational Health Programs	5
PH.182.845	EHE MS Special Studies and Research	1
Electives		
<i>Summer - No registration required</i>		

## Second Year Requirements

Code	Title	Credits
<b>First Term (fifth term of program)</b>		
PH.182.622	Ventilation and Hazard Control	4
PH.317.600	Introduction to the Risk Sciences and Public Policy	4
PH.182.810	MS Field Placement	1
PH.182.850	EHE MS Essay	1
PH.182.845	EHE MS Special Studies and Research	1
Electives		
<b>Second Term (sixth term of program)</b>		
PH.182.637	Noise and Other Physical Agents in the Environment	4
PH.317.610	Risk Policy, Management and Communication	3
PH.182.850	EHE MS Essay	1 -
		16
PH.182.845	EHE MS Special Studies and Research	1
Electives		

In addition, all students are required to complete 550.860.82 Academic & Research Ethics. This online course must be completed during the first term after matriculation.

Note: It is permissible to substitute the online versions of noted courses in place of the face-to-face versions. Online versions of courses are usually offered in different terms and may require rearrangement of other courses. Check with your advisor.

## Internship or Independent Professional Project & Essay Requirement

As a requirement of the MS OEH program, each student must complete an independent professional project (IPP) and write a culminating essay that is presented in a formal seminar. The IPP can be completed as part of the internship experience for full-time students or in the context of a student's employment for part-time students. The essay is intended to serve as an integrating experience for the students. The content is based on an occupational or environmental health problem that is pertinent to the educational goals of the student and approved by the advisor. The essay is typically the product of an internship or employment experience. The essay represents a substantive application of professional technical skills through the process of collecting and summarizing data and reviewing appropriate literature. Where possible, students are encouraged to pursue projects that can lead to a publishable manuscript.

The full-time program includes a three-month internship. The internship is designed to provide professional experience tailored to the needs and interests of each student. During the internship, the student is expected to assume independent responsibility for a project, which is described in a culminating paper that serves as a review of the entire educational experience. Internship placements for full-time students are evaluated by asking field mentors to evaluate the student performance and each student to evaluate their internship. Students will register for 182.810 MS Field Placement.