TOXICOLOGY FOR HUMAN RISK ASSESSMENT, MS

The Master of Science (MS) in Toxicology for Human Risk Assessment (https://publichealth.jhu.edu/academics/ms-in-toxicology-for-human-risk-assessment/) is the only program of its kind in the United States. Our innovative master's program equips graduates with the knowledge and skills needed to begin or advance their career as professionals in the evolving field of human health and environmental risk assessment.

The MS program consists of:

- Coursework in the fundamental concepts and testing approaches used in classic risk assessment processes, as well as those used in the new paradigm for toxicity in the 21st Century (https://jhu.pure.elsevier.com/en/publications/food-for-thought-toxicity-testing-in-the-21st-century-beyond-envi-6/), and
- A seven- to twelve-month internship with a government agency, non-governmental organization, industry, or private sector group.

Students enrolled in the program may also complete the Certificate in Risk Sciences and Public Policy. (https://e-catalogue.jhu.edu/public-health/certificates/risk-sciences-and-public-policy/)

Program Director:
Joseph Bressler, PhD

Curriculum

Course location and modality is found on the BSPH website (https://www.jhsph.edu/courses/).

The curriculum consists of a core of program-required coursework that is taken during the first year of the program. Courses are offered in four 8-week terms from the beginning of September to mid-May. Courses related to the internship and to the capstone essay will be completed in the second year.

Code	Title	Credits
PH.550.860	Academic & Research Ethics at BSPH	
PH.180.609	Principles of Environmental Health	4
PH.187.610	Public Health Toxicology	4
PH.317.600	Introduction to the Risk Sciences and Public Policy	4
PH.317.610	Risk Policy, Management and Communication	3
PH.317.605	Methods in Quantitative Risk Assessment	4
PH.317.615	Topics in Risk Assessment	2
PH.340.721	Epidemiologic Inference in Public Health I	5
PH.340.722	Epidemiologic Inference in Public Health II	4
PH.140.621	Statistical Methods in Public Health I	4
PH.140.622	Statistical Methods in Public Health II	4
PH.187.640	Toxicology 21: Scientific Foundations	1
PH.187.632	Molecular Toxicology	4
PH.187.645	Toxicology 21: Scientific Applications	3
PH.180.640	Molecular Epidemiology and Biomarkers in Public Health	4
PH.187.655	Evidence-Based Toxicology	3
PH.187.650	Alternative Methods in Animal Testing	3
PH.180.628	Introduction To Environmental and Occupational Health Law	4
PH.410.620	Program Planning for Health Behavior Change	3
PH.340.680	Environmental and Occupational Epidemiology	4
PH.182.845	EHE MS Special Studies and Research	1 - 22
PH.182.810	MS Field Placement	1 - 22
PH.182.850	EHE MS Essay	1 - 16

Internship

Students in this professional MS degree program will be expected to assume independent responsibility for a professional project that will be carried out off-site at a governmental agency, nongovernmental organization, or industry or private sector company. Specific opportunities will be identified by the student in conjunction with the adviser. The minimum requirements for the internship will be a duration of four months (two academic terms) in conjunction with 32 course credits of special studies and research. The student will be directed in the internship experience by an on-site mentor with whom the adviser will communicate regularly to follow and support the student's progress and success in achieving the agreed-upon goals of the independent project. If agreeable to the student and sponsor, the overall length of the project period may extend beyond the minimum necessary for completion of the internship requirements of the MS degree program.

Master's Essay and Presentation

Students in professional programs at the Johns Hopkins School of Public Health are required to successfully complete and submit a culminating project that demonstrates integration of the skills developed during the coursework and internship experiences. For students in this program, this project takes the form of an in-depth capstone essay.

The topic of the essay will typically be linked to the specific or general focus of the internship experience and will be chosen in consultation with the adviser, who must approve it. The format of the essay will conform to standards set by the Department and may vary to accommodate the nature of the topic. Students are encouraged to select a topic that will lend itself to publication in a scientific journal. Following approval of the essay, students will make a formal presentation of the essay to departmental faculty and students to complete the requirements for the MS degree.

Academic Standards

Students must meet minimum satisfactory academic standards to remain in the MS program. To meet these standards, students must maintain a minimum 2.75 cumulative grade point average, and retake any required coursework in which they earn a grade of "D" or "F". If a student receives a grade of "D" or "F" twice in the same required course, they may not repeat the course a third time. If the course is a required core course with no other options, the student will be dismissed from the program.

For complete policies and procedures, please view our current handbook (https://publichealth.jhu.edu/departments/environmental-health-and-engineering/programs/graduate-programs/graduate-student-resources/).

According to the requirements of the Council on Education for Public Health (CEPH), all BSPH degree students must be grounded in foundational public health knowledge. Please view the list of specific

CEPH requirements by degree type (https://e-catalogue.jhu.edu/public-health/ceph-requirements/).

Upon completion of the program, students will be able to:

1. Explain and interpret epidemiologic studies to support risk assessment and decision-making.
2. Elaborate on commonly used public health measures, such as relative risk, attributable risk, and relative hazards, and select appropriate statistical methods for estimating such measures in the presence of covariates.
3. Interpret descriptive and inferential statistics resulting from data analysis and draw relevant conclusions.
4. Contrast traditional and novel methodological approaches in toxicology.
5. Define the major environmental agents (i.e. environmental chemical, biological, and physical that cause adverse effects on human health) and their sources, and their regulations.
6. Describe the toxicology of (toxicokinetics and dynamics) of environmental agents.
7. Describe approaches for in vitro to in vivo modeling of toxicokinetics.
8. Evaluate evidence-based toxicology studies and studies conducted using other systematic approaches.