

# HUMANE SCIENCES AND TOXICOLOGY POLICY, CERTIFICATE

## Humane Sciences and Toxicology Policy Certificate Program

### OVERVIEW

The certificate program will introduce, and explain the application of, the "3Rs" (reduction, replacement and refinement), which are the guiding principles of humane science as well as demonstrate how the use of humane science principles in biomedical research can lead to more robust scientific methodology and knowledge. The program's course of study covers the scientific principles needed to appreciate humane science and identify and evaluate its implications in biomedical research and public health policy. Persons completing the certificate program will be well equipped to translate new toxicological knowledge into scientifically credible product safety evaluations and hazard assessments and apply these concepts to environmental health decision making.

### EDUCATIONAL OBJECTIVES

The educational objectives of this certificate program are:

1. To provide students with an understanding of the principles that govern the relationship between biomedical researchers and laboratory animals;
2. To demonstrate the application of transgenic, in-vitro, computational, non-mammalian and non-animal research in toxicology; and
3. To illustrate the ways in which humane science and alternatives are used in setting regulatory standards and making environmental health policy decisions.

### ADMISSIONS

Contact information and complete certificate program admission information is available on the certificate program page (<https://publichealth.jhu.edu/academics/humane-sciences-and-toxicology-policy-certificate-program/>) on the Bloomberg School of Public Health website.

### REQUIREMENTS FOR SUCCESSFUL COMPLETION:

The certificate program requires a minimum of 19 term credits. All required and elective courses must be taken for a letter grade; a minimum grade of C is required in all certificate coursework and students must maintain a 2.75 or better overall GPA for all certificate coursework. The certificate program length is flexible; however, the program must be completed within three years.

Students with prior training in toxicology or biostatistics may contact one of the Faculty Sponsors to discuss the possibility of substituting other coursework for either 187.610 "Public Health Toxicology" OR 140.615 "Statistics for Laboratory Scientists." Such students must complete a minimum of 18 credits of certificate program coursework.

Students should review the section of the website that addresses completion ([https://www.jhsph.edu/academics/certificate-programs/JHSPH\\_certificate\\_completion.html](https://www.jhsph.edu/academics/certificate-programs/JHSPH_certificate_completion.html)) before completing

certificate program requirements. The student's transcript will not indicate that the certificate was earned until the Notification of Completion has been submitted, verified by the certificate program, and processed by the Registrar.

### COURSE OF STUDY

Students should check the Bloomberg School of Public Health course directory (<https://www.jhsph.edu/courses/>) to confirm when the courses are offered, and students should check for prerequisites and whether instructor consent is required.

Code	Title	Credits
PH.550.860	Academic & Research Ethics at BSPH (All students are required to complete this noncredit online course in their first term of study)	
Required Courses (students must complete all of the courses listed below but may choose to take either 180.601 or 180.609, not both).		
PH.180.601	Environmental Health (typically offered onsite in Summer and Summer Institute and online in 3rd term)	5
or		
PH.180.609	Principles of Environmental Health (typically offered onsite in 1st term)	4
PH.140.615	Statistics for Laboratory Scientists I (typically offered onsite in 3rd term)	4
PH.180.638	Animals in Research: Ethics (typically offered online in 4th term)	1
PH.187.610	Public Health Toxicology (typically offered onsite in 1st term and online in 2nd term)	4
PH.187.625	Animals in Research: Law, Policy, and Humane Sciences (typically offered online in 4th term)	3
PH.187.650	Alternative Methods in Animal Testing (typically offered online in 4th term)	3