

**DOCTORAL
PROGRAMS**

DOCTORAL PROGRAMS (PhD and DrPH)

The Department of Environmental Health Sciences awards the degrees of Doctor of Philosophy (PhD) and the School awards the Doctor of Public Health (DrPH). Students in the PhD program select from one of four areas to focus their academic studies and research: Environmental Health Engineering, Occupational & Environmental Health, Physiology, or Toxicology. DrPH students establish a personalized curriculum (an individual Academic Plan) based on the student's professional experience, future career, and goals. The research and dissertation orientations of the PhD and DrPH programs can be contrasted as follows:

PhD	DrPH
<i>Emphasis on generating new science and advancing theory</i>	<i>Emphasis on applying research to solve public health problems</i>
<i>Contributions to laboratory and field methodology, data analysis</i>	<i>Contributions to eliminating population risks from environmental hazards and improving public health practice</i>
<i>Innovations in technology and experimental methods</i>	<i>Innovations in environmental health interventions that prevent disease and eradicate hazards</i>
<i>Career goals in research, academia</i>	<i>Career goals in environmental health leadership, public health practice, academia</i>

EHS POLICY ON DOCTORAL REGISTRATION

Full-time - In addition to the School's residency requirement, full-time doctoral candidates in the Department of Environmental Health Sciences must register on a continuous basis for 16 units each academic term. Registration is not required during the summer or interim sessions and tuition funding is usually not provided for these terms.

Note: Some students will be registered by the department during the summer term for administrative purposes; however, this registration does not imply that didactic courses will be funded.

Part-time - The DrPH program has an approved part-time status. These students must register on a continuous basis for a minimum of 1 unit per term. Registration is not required during the summer or interim sessions.

Should it become necessary to take a break from studies, students should contact their advisor and determine if a formal Leave of Absence is necessary. Any request for change of status must be submitted to the EHS Academic Program Manager and approved by the School and the Department under the guidelines outlined in the School's catalog.

All students are required to discuss the current term's registration with their advisor before the end of the Add/Drop period. Any doctoral student (full or part-time) who fails to register during the regular academic terms will be considered withdrawn by the School and the Department.

TIMELINE

Full-time

Full-time doctoral students have seven years from the time of matriculation to complete their degree requirements. However, it is expected that all doctoral students will have completed the program five years after matriculation. Student funding beyond five years is generally not available. Students who have been approved for a formal Leave of Absence (LOA) may extend this time. See School policy regarding LOA for details.

Part-time

Students in the approved part-time DrPH program have nine years from the time of matriculation to complete their degree requirements. Students who have been approved for a formal Leave of Absence (LOA) may extend this time. See School policy regarding LOA for details.

RESIDENCY REQUIREMENTS

A minimum of four consecutive terms, as a full-time, resident student, is required to fulfill the doctoral degree requirement for full time doctoral students. In most cases, the full-time requirement is fulfilled by registering for 16 credits each term. Students in the part-time DrPH program are exempt from this requirement.

Requests for exceptions for those in the full-time doctoral program should be approved by the academic advisor and forwarded to the EHS Academic Program Manager. Once approved by the Department, the request will be forwarded to the Committee on Academic Standards. The Committee on Academic Standards makes the final determination regarding all exemption requests.

REQUIREMENTS FOR COURSES OUTSIDE PRIMARY DEPARTMENT

The PhD program requires at least 64 credits of formal coursework. At least 18 credit units of formal coursework are required in courses outside the student's primary department. At least nine of these credits must be taken in the School of Public Health. A record of these courses will be maintained by the EHS Academic Program Manager. There is no minimum number of non-departmental courses or units specified for the DrPH program.

DOCTORAL FACULTY ADVISORS

Doctoral students are assigned a faculty advisor once they are admitted into a degree program. The advisor serves as the primary contact for the Department and will assist the student with course selection each term, planning research rotations if appropriate, preparation of journal club and divisional seminar presentations, and the interpretation of departmental and School policies. This initial, or academic, advisor may or may not become the student's research advisor. Toward the end of the second year, a thesis research advisor is selected to serve as the student's advisor for the conduct of their research. This selection, however, does not exclude significant interactions with other members of the faculty. The faculty advisor must approve student registration and course plans (as applicable). At the end of each academic year, the advisor and the student should review academic progress and determine plans for the future year that will keep the student on track toward graduation. This information is also reviewed by the student's doctoral program director and/or the Academic Program Manager. In the event that the student wants to change advisors, he/she must discuss the reasons with his/her program director and submit a request to the EHS Academic Program Manager. Such changes are entertained upon mutual agreement and availability of an appropriate advisor. Changes will be noted on the student's transcript.

USE OF ANIMAL SUBJECTS AND HUMANS

Before beginning contact with either human or animal subjects, doctoral students as all researchers, must obtain the appropriate approval for their projects from either the Institutional Review Board (IRB) or the Institutional Animal Care and Use Committee (IACUC). In both cases, the faculty mentor must be involved in this process in that the protocol for the research project is submitted under the faculty member's name with the student listed as a student investigator. It is important to remember that NO contact can be made with humans, human tissue, human samples or human records without prior approval of the protocol by the IRB. In addition, online training in the use of animals in research, human subjects research and HIPAA Privacy Rule must be completed. NO animals can be purchased for experimentation without an IACUC protocol approval.

ASSESSMENT OF PROGRESS

The School's minimum grade point average (GPA) requirement for doctoral students is 2.75, however, the various programs within the Department may impose more stringent guidelines which would be listed in the appropriate section of the handbook for that program.

In order to monitor and document adequate academic performance and progress, a review of the doctoral student's grades and activities is documented annually. This information is reviewed by the advisor, the doctoral program director and the Academic Program Manager. Information that has not been submitted to the EHS Academic Program Manager, such as research committee meetings or course completion documentation, is identified and added to the academic record before it is subjected to final review. If it is determined that the student has not adequately progressed in their program, the student and their advisor are notified and will be asked to submit a plan to resolve the problem. This plan must be reviewed and approved by the division or program director and Department Chair.

ATTENDANCE AND VACATION

Doctoral students are expected to attend all classes and participate actively, including journal club and seminars. Scheduling conflicts that arise must be discussed with the student's advisor. Since research is a fundamental part of the curriculum, it is expected that students will work in the laboratory, or pursue other research, including public health practice with the approval of the advisor during term breaks. Generally, students will take no more than two weeks vacation per academic year (University holidays are approved time off and are not included in the two weeks vacation). The advisor should be informed in writing of vacation plans and any other absences.

EVALUATION OF DOCTORAL STUDENTS

Doctoral students are evaluated by the Department, School and University. The Policy and Procedure Manual (PPM) for each program and should be reviewed when a student reaches this stage of their academic program. In the event that there is a difference between the PPM and this handbook, the PPM is considered to be the authoritative source. PPMs are found on the School's website.

- I. Coursework Successfully Completed;
Research Topics Identified
- II. Comprehensive Written Examination Passed
- III. Departmental Oral (administered by academic divisions)
Note: Exam is optional for DrPH students
- IV. PhD Preliminary Oral Examination or DrPH School-wide Preliminary Oral Examination Passed
- V. Thesis Advisory Committee established (Departmental)
- VI. Thesis Research Begins
- VII. Thesis Defense Date Scheduled
- VIII. Thesis Forwarded to Readers
- IX. Final Oral Defense and Public Seminar Presented

DOCTORAL EXAMS AND PROCEDURES

The following information regarding thesis and doctoral exams serves as a general guide to departmental policies and procedures. Please note that the School's PPM (see: <https://my.jhsph.edu/Resources/PoliciesProcedures/ppm/Pages/default.aspx>) for PhD programs provides comprehensive details about each exam and related procedures. See divisional sections for procedures specific to each program.

COMPREHENSIVE WRITTEN EXAM

A comprehensive written exam is required of all doctoral students. The exam should be taken before the end of the second year of the program, when course work is essentially completed. This examination constitutes a comprehensive inquiry into the student's grasp of the subject matter underlying his/her discipline. Questions explore the student's understanding of scientific principles and methods. Students are expected to integrate their knowledge gained through required courses, courses representing the elected field of specialization and research, and seminar presentations. The program director should send written notification of the successful completion of the examination to the Department's Academic Program Manager. If a student fails the written exam, division faculty will decide if he/she will be permitted to retake the exam, and if so, whether he/she will be examined orally on a particularly weak area or be required to take another exam comprised of new questions. Only one reexamination may be permitted. A second failure will result in termination from the program. Doctoral students who are not able to continue in the program may request a transfer from the PhD program to the MHS or ScM program. Each academic division or program has specific guidelines concerning the written comprehensive exams, which may be obtained from the divisional and program offices. Toxicology students fulfill this requirement by preparing a research proposal, which is outlined in the Toxicology section of this handbook.

DEPARTMENTAL ORAL EXAMINATION

All PhD students of the Department of Environmental Health Sciences are required to pass a departmental oral exam as a prerequisite for taking the University Graduate Board Oral Examination. This exam provides an opportunity for the student to demonstrate effective verbal communication skills and the ability to engage in scientific exchange.

The Departmental Oral Examination is administered by the EHS academic divisions. The following process is usually followed for the examination but students should consult with their advisor about specific expectations, including faculty who should be in attendance. The examining committee comes predominantly from the student's division, but must include at least one faculty member from outside the division. It is the responsibility of the student to arrange a time and place for the examination. A written notice of the date and time of the exam along with a copy of the research proposal (following the appropriate grant application format) must be submitted to the committee at least two weeks in advance of the examination. The student bears overall responsibility for arranging the examination and ensuring that the required number of faculty will be in attendance.

During the oral examination, the student presents his/her proposal and fields questions to determine whether he/she is adequately prepared to conduct the research outlined in the proposal. Questioning continues until all faculty members have had the opportunity to ask questions and are satisfied that the questioning has been completed. At the conclusion of the examination, the student will be excused from the room and the faculty will vote to pass or fail the student. If more than one faculty member votes fail, the student will be considered to have failed the exam.

If the student fails the exam, he/she may have an opportunity to retake the exam at the discretion of the examining committee. The committee can agree to a conditional pass and define the conditions that must be fulfilled in order to obtain a pass. The committee chair will submit a brief report summarizing the decision of the committee to the EHS Academic Program Manager. This information will be communicated to the Office of the Registrar by the EHS Academic Program Manager.

PRELIMINARY ORAL EXAMINATION

The Preliminary Oral Examination (also referred to as the Graduate Board Examination), administered by the University, determines whether the student has both the ability and knowledge to undertake significant research in his/her specialized area of interest. The exam must be taken no later than the end of the student's third year in residence after the full-time residency requirement is completed, and before significant engagement in dissertation research. Toxicology students must take the examination within one to two months of completing the Comprehensive Written Examination, which is usually by May or June of the second year (see Toxicology section).

The student and his/her advisor are responsible for initiating arrangements for this examination. The Department's Academic Program Manager will assist with the appropriate forms and other important information.

Requests for scheduling the exam must be sent to the Office of Records and Registration at least four weeks prior to the examination; therefore, it should be submitted in advance of this time to the EHS Academic Program Manager for processing.

The committee shall consist of five voting members. Not more than three members of the primary Department can serve, and one of these must be the thesis advisor. The primary appointment of faculty members determines whether they are considered inside or outside the department. Advisors, however, are considered inside examiners even if their appointment is outside of the department sponsoring the candidate. The senior faculty member outside the student's major department will normally serve as chair and must hold the rank of Full or Associate Professor and be appointed by the Graduate Board. One adjunct faculty or one scientist track faculty may serve on the committee, but may not serve as the chair or the advisor. Two alternates, one inside and one outside the department, will also be designated. Each must have a current appointment as Assistant Professor or higher in a JHU department or program. A minimum of three departments of the University, at least two being from the School of Public Health, must be represented.

If the student fails the exam and is permitted a re-examination, he/she must be re-examined within a year.

THESIS ADVISORY COMMITTEE (Departmental)

Upon successful completion of the Preliminary Oral Examination, a Thesis Advisory Committee will be formed to provide continuity in the evaluation of progress and development of the student. The principal responsibilities of the Committee are to review the student's dissertation proposal, to advise and guide the student's research, and to read and evaluate the student's final dissertation. Students work in consultation with their advisor and/or program/division director to select members of the Committee. The Committee consists of the student's advisor and two to four other faculty members from both inside and/or outside the student's department with expertise in areas relating to the proposed research of the student. Membership of the Committee may change as dictated by the needs of the student and direction of the research.

It is expected that the student will meet formally at least twice per year (every six months) with the Committee, beginning six months from the successful completion of the graduate Preliminary Oral Examination until the final defense. At these meetings, the student will present progress on his/her thesis project and the Committee will offer advice. For each meeting, a written evaluation (Research Committee Meeting Form) of the student's development will be prepared by the Committee, discussed with the student, and submitted to the Academic Program Manager to be included in the student's departmental file. As the thesis project progresses, the Committee may indicate a target date for completion of the project.

THESIS RESEARCH (Dissertation)

The thesis must be based on original research, worthy of publication and acceptable to the Department and to the Committee of Thesis Readers (Committee of Readers).

FINAL ORAL DEFENSE AND PUBLIC SEMINAR

The oral defense of the thesis shall be conducted by the Committee of Thesis Readers after the Thesis Advisory Committee agrees that the candidate is ready for the formal defense.

During this defense the Committee shall evaluate:

- I. The originality and publication potential of the research;
- II. The candidate's understanding of the details of the methodologic and analytic work;
- III. The final quality of the written thesis document.

Certification of Fulfillment of all Requirements and Nomination for Degree—

Once a date for the defense has been agreed upon by the Committee of Thesis Readers and Final Oral Examination Committee, a formal request for the final oral defense should be submitted to the Office of Records and Registration at least four weeks prior to the exam date. This should be submitted in advance of the four week period to the EHS Academic Program Manager for processing. The Academic Program Manager will assist with the appropriate forms and other important information. The advisor will notify the Department chair that the thesis is in a final form that is ready to be submitted to the readers and that all other School and Department requirements for the degree have been fulfilled.

Committee of Thesis Readers — The final oral examination is a defense of the thesis before a committee of at least four readers after they have read the thesis and agreed that it is ready for defense. The readers include the thesis advisor and at least three other faculty members with the rank of Assistant Professor or higher. At least three departments of the University, including at least two departments of the Bloomberg School must be represented. Normally, two readers are from the student's own department. The senior faculty member outside the student's Department will normally serve as chair and must hold the rank of Full or Associate Professor. The primary appointment of faculty members determines whether they are considered inside or outside the department.

Timing Note: The thesis should be in its final form before distribution to the readers. This is confirmed by the advisor signing off on the thesis before it's distributed to the readers. Thesis readers must have at least one month to read the thesis before the final examination is held as they might have suggested revisions as well.

Thesis Seminar — All doctoral candidates are required to give a formal public presentation of their completed thesis work at a public Division or Program Seminar.

Divisional administrative staff are available to assist in scheduling a room for this event as well as advertising this event to the appropriate audience.

Students should consult the Preparation of Thesis, Attachment No. I, of the Policy and Procedure Memorandum (PPM) for details on the preparation of the thesis at:
www.library.jhu.edu/services/cbo/guidelines.html.

PhD in ENVIRONMENTAL HEALTH ENGINEERING

PROGRAM DESCRIPTION

Environmental Health Engineering scientists seek to improve public health through interdisciplinary research, professional training, and practice. Research focuses on ways to prevent or minimize the adverse effects of physical, chemical, and biological agents by identifying and studying their sources, fate and transport in both occupational and non-occupational environments. They also develop and evaluate risk management strategies that effectively protect human health. Exposure assessment is an integrating theme throughout this program. Research and training in exposure and risk assessment employs principles and methods in chemistry, biology, and physics and includes development and evaluation of biomarkers of exposure.

Environmental health engineering research opportunities in the Department emphasize exposure assessment methods and models for recognizing, evaluating and controlling hazards in the workplace and community environment. Assessments consider the continuum of exposure from source to effect and are comprehensive in nature, incorporating all relevant routes and pathways with a particular emphasis on air and water contamination. Such assessments are integral to evaluating risk, to discovering environmental disease associations, and to developing methods and strategies for hazard reduction. Research within the division is highly interdisciplinary with opportunities to interact and collaborate with other departmental faculty, as well as faculty from other departments in the School, the School of Medicine, the School of Engineering, and the School of Arts & Sciences. Applicants for research training should have a strong background in the physical, chemical and biological sciences, including college-level physics and calculus.

SEMINARS AND JOURNAL CLUB OPPORTUNITIES

In addition to attendance at formal courses, PhD students are expected to attend the divisional seminars, which are generally held at the School of Public Health at noon on Wednesdays. Once a month, the seminar session will be in the format of a Journal Club presentation. Students are also expected to attend the monthly NIOSH Education and Research Center (ERC) seminar, which is also attended by students from the Division of Occupational and Environmental Health and the Occupational Injury Epidemiology Program.

GRADE AND PROGRAM REQUIREMENTS

All students must maintain at least a “B” average (3.0) to remain in the program. Furthermore, faculty expects that students will not obtain a grade below a “B” in any course. If a student receives a grade lower than “B”, she/he must consult their faculty advisor and discuss an appropriate course of action. A grade of “C” might be allowed to stand, or the student may be required to retake the course. This is a decision that should be made in consultation with the faculty advisor. No grade of less than “C” is considered acceptable.

A student who is unable to maintain a “B” average will be considered in academic difficulty and undergo a formal academic review by the faculty. Based on the outcome of this review, she/he may be asked to leave the program.

POSTDOCTORAL OPPORTUNITIES

Postdoctoral students begin the program working in the laboratory of their postdoctoral mentor. Postdoctoral students may, after consultation with their faculty mentor, take elective courses. However, the primary training of postdoctoral students in the program occurs in the laboratory.

Postdoctoral students who are U.S. citizens or permanent residents can be supported by the NIEHS training grant for up to two years. Postdoctoral students are expected to apply for their own individual postdoctoral fellowships from the NIH or another appropriate organization with the goal of obtaining independent support beginning in the second year of postdoctoral study. This affords other faculty members the opportunity to recruit additional postdoctoral students.

Department of Environmental Health Sciences
PhD in Environmental Health Engineering - Academic Year 2010-11
Core Curriculum Requirements

Departmental Requirements

Course Number	Course Name	Day/Time	Term	Units
180.609	Principles of Environmental Health I	MW 1:30 - 3:20	1	4
180.610	Principles of Environmental Health II	TTh 8:30 - 10:20	2	4

Division Requirements

Course Number	Course Name	Day/Time	Term	Units
140.621	Statistical Methods in Public Health I	TTh 10:30 - 11:50 *	1	4
140.622	Statistical Methods in Public Health II	TTh 10:30 - 11:50 *	2	4
140.623	Statistical Methods in Public Health III	TTh 10:30 - 11:50 *	3	4
180.629	Environmental and Occupational Health Law and Policy	MW 3:30 - 5:20	2	4
180.640	Molecular Epidemiology and Biomarkers in Public Health	TTh 2:30 - 3:50	3	4
182.625	Principles of Occupational and Environmental Hygiene **	TTh 1:30 - 3:20	2	4
182.640	Food- and Water-Borne Diseases	TTh 1:30 - 2:50	3	3
187.610	Public Health Toxicology **	WF 3:30 - 4:50	1	4
317.600	Introduction to the Risk Sciences and Public Policy **	MW 5:00 - 6:30	1	3
317.605	Methods in Quantitative Risk Assessment	MW 5:00 - 6:30 *	3	4
340.601	Principles of Epidemiology <i><u>OR</u></i>	MWF 8:30 - 9:20 *	1	5
340.751	Epidemiologic Methods I	MWF 8:30 - 9:50 *	1	5

Occupational and Environmental Hygiene / Air Pollution Program Requirements

Course Number	Course Name	Day/Time	Term	Units
182.614	Industrial Hygiene Laboratory	WF 1:30 - 4:50	3	5
182.615	Airborne Particles	F 9:30 - 11:50	4	3
182.616	Advanced Topics In Airborne Particles	F 8:30 - 10:20	2	2
182.617	Introduction to the Chemistry of Ambient Air Pollutants	TTh 3:30 - 4:20	2	2
183.641	Health Effects of Indoor and Outdoor Air Pollution (<i>Note: Every other year</i>)	TTh 1:30 - 2:50	4	3

Water and Health Program Requirements

Course Number	Course Name	Day/Time	Term	Units
182.638	Environmental and Health Concerns in Water Use and Reuse	WF 8:30 - 10:20	4	4
221.629	Water and Sanitation Needs in Complex Humanitarian Emergencies	TTh 1:30 - 3:20	2	2
260.631	Immunology, Infection and Disease	TTh 3:30 - 4:50	2	3

(continued on next page)

Department of Environmental Health Sciences
PhD in Environmental Health Engineering - Academic Year 2010-11
Core Curriculum Requirements (cont'd)

School Requirements

The following courses fulfill the School requirements for all research students. Doctoral students who have earned an 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:

<https://apps4.jhsph.edu/academicethics>

This module should be completed within two terms of matriculation and must be completed before graduating.

Course Number	Course Name	Day/Time	Term	Units
550.600 or 550.860	Responsible Conduct of Research <i>(NIH funded students MUST take this course)</i> OR Research Ethics	W 3:30 - 5:20 OR Online	1	1
550.865	Public Health Perspectives on Research	Online	2	2
	Academic Ethics Module +	Online		

* Check current schedule for all course and/or lab times:

<http://commprojects.jhsph.edu/courses>

** Also offered Online

Note: Courses offered online require students to establish an eLearning account and to complete the free *Introduction to Online Learning* course prior to the term in which the course is taken. For instructions go to:

<http://distance.jhsph.edu/iol/>

+ In addition, all students are required to complete the Academic Ethics Module (online course), which is located at:

<https://apps4.jhsph.edu/academicethics>

This module should be completed within two terms of matriculation and must be completed before graduating.