Introduction: Doctor of Science

The Doctor of Science in Environmental Health (SD) in the Exposure, Epidemiology and Risk (EER) Program provides students with training and expertise relevant to conducting independent research in domains including environmental epidemiology, environmental and occupational exposure assessment, ergonomics and safety, and risk and decision sciences.

EER doctoral graduates are qualified for research and teaching positions in schools of public health and other academic institutions, as well as positions in local and federal agencies, and in the private sector. Recent graduates have taken positions as post-doctoral researchers or junior faculty members; as research scientists with the U.S. Environmental Protection Agency (EPA), the National Institute for Occupational Safety and Health (NIOSH), and Health Canada; and as staff scientists with the National Research Council, the Mexican Ministry of Health, and several consulting organizations.

On occasion the EER Program collaborates in joint degree programs with other departments at the School of Public Health. For example, Environmental Epidemiology (EE) doctoral students may seek a joint degree in both the Departments of Environmental Health and Epidemiology and these students must meet the requirements of both departments. Students interested in this or other joint degree programs should speak with their advisors for additional information.

Students undertake a comprehensive program which includes a sound technical foundation in multiple domains of environmental health, as well as specific coursework related to their chosen major and minor fields. In addition to coursework and other school-wide requirements, EER doctoral candidates must serve as teaching assistants for the equivalent of three 2.5-credit courses (total 7.5 credits). Most SD students also take advantage of opportunities to present papers at scientific conferences and seminars while in the doctoral program.

Majors and Minors

Doctoral students normally have one major and two minors. Joint doctoral degree candidates are required to have two majors and one minor.

Students preparing their prospective and/or final program are required to present coursework totaling a minimum of 20 credits in the major field(s) and a minimum of ten credits in the minor field(s). Students should begin working on a prospective or final program with their faculty advisor early, so that course selections fulfill the major and minor requirements. Graduate level courses taken at other institutions may be allowed to count towards major and minor fields in the Prospective/Final Program—however, students submitting courses outside of the Harvard TH Chan School of Public Health for consideration for their major and minor fields must provide a course description and an official transcript with a General Petition form.

The Prospective Program form must be submitted to the Registrar’s Office by the end of the second semester. The Final Program form must be submitted to the Registrar’s Office by the end of the third semester.

The General Petition and Prospective/Final Program forms can be found on the website of the Office of the Registrar:


Majors and Minors must be approved by EER and the EH Department Chair as part of the final program. This approval involves evaluation of both the major and minor fields and the courses proposed to meet
those fields. All of the courses listed as part of the final program must be taken for an ordinal grade.

PLEASE NOTE that the EER program requires doctoral students to have a grade point average of “B+” or better in the major and minor fields. If this requirement is not met, the student cannot proceed to the Oral Exam and will be given one year to bring grades to the B+ average.

For Doctor of Science students in EER, there are five pre-approved major fields – environmental epidemiology, environmental exposure assessment, occupational hygiene, ergonomics and safety, and risk and decision sciences. Minor fields may include any of the pre-approved major fields, specialty areas representing other departments (e.g., epidemiology, biostatistics), or application areas relevant to dissertation research (e.g., indoor air pollution, water pollution, environmental policy, sustainability, etc.).

Because of the numerous application areas, pre-approved lists of courses have not been posted for these minor fields. Always consult your advisor to structure appropriate minor fields.

Course Requirements

HSPH Requirements:

All doctoral students at the Harvard TH Chan School of Public Health must take ten credits of intermediate-level Biostatistics courses.

EH Departmental Requirements:

All graduate students in the Department of Environmental Health are required to take EH205: Human Physiology

EER Program Requirements:

All EER Doctoral students must take or be waived from the following courses:

BIO201: Introduction to Statistical Methods

EPI201: Epidemiological Methods I

EPI202: Elements of Epidemiological Research

EH510: Fundamentals of Human Environmental Exposure Assessment

ID215: Environmental and Occupational Epidemiology

RDS500: Risk Assessment

EH520: Research Design in Environmental Health
(This course provides guidance on preparing a research proposal.)

Additional course selections for doctoral students should be determined in close collaboration with the faculty advisor. Individualized programs, based on each student’s experience and needs, should be developed to ensure the coursework provides the requisite background for dissertation research and fulfills the student’s major and minor field areas.

Some suggested courses for each chosen major are as follows:

Environmental Epidemiology:

- EPI203: Design of Cohort and Case-Control Studies
- EPI204: Analysis of Case-Control and Cohort Studies
- BIO210: The Analysis of Rates and Proportions
- BIO213: Applied Regression for Clinical Research
- ID271: Advanced Regression for Environmental Epidemiology
- EH504: Principles of Toxicology
Environmental Exposure Assessment:
- EH257: Water Pollution
- EH263: Analytical Methods and Exposure Assessment
- EH297: Atmospheric Environment Seminars
- EH510: Fundamentals of Human Environmental Exposure Assessment
- EH522: Indoor Environmental Quality and Health
- Environmental law or environmental policy (such as MIT 1.811J: Environmental Law, Policy and Economics: Pollution Prevention and Control)

Risk and Decision Sciences:
- RDS280: Decision Analysis for Health and Medical Practices
- RDS282: Economic Evaluation of Health Policy and Program Management
- RDS285: Decision Analysis Methods in Public Health and Medicine
- Environmental law or environmental policy (such as MIT 1.811J: Environmental Law, Policy and Economics: Pollution Prevention and Control)
- Economics (such as HPM206: Economic Analysis)

Occupational Hygiene and Ergonomics and Safety:
- EH241: Occupational Safety and Injury Prevention
- EH243: Ergonomics/Human Factors
- EH253: Engineering Controls for Occupational Hazards
- EH262: Introduction to the Work Environment
- EH279: The Radiation Environment: Its Identification, Evaluation and Control
- EH292: Properties and Behavior of Airborne Particles
- ID263: Practice of Occupational Health
- MIT 11.370: Brownfields Policy and Practice
- MIT 1.812J: Regulation of Chemicals, Radiation, and Biotechnology
- Biomedical Engineering 110: Physiological Systems Analysis

Teaching Assistants
All EER doctoral students are required to serve as teaching assistants for at least 7.5 credits of courses. Of these 7.5 credits, 5 credits must be in a course (or courses) taught by EER Faculty.

Waiver Procedure
To waive a required course, a student must obtain written permission from the course instructor by presenting evidence of previous equivalent coursework. **No credit units are awarded for a course that is fully or partially waived.**

To waive one of the School-required Biostatistics or Epidemiology core courses, a “Waiver of Core Course” form is required. Students submitting this form should first obtain the approval from their faculty advisor, then obtain signatures of the course instructor(s). The completed form must be submitted to Barbara Zuckerman, Assistant Director of Faculty and Academic Affairs for the Department of Environmental Health (Building 1, 13th Floor, Room 1301), for approval of the Chair of the EH Department. The “Waiver of Core Course” form can be obtained from the Registrar’s Office (http://cdn1.sph.harvard.edu/wp-content/uploads/sites/47/2012/11/form_core_waiver.pdf).
To waive EH department or EER program requirements, a “Department/Program Requirements Waiver Form” is required. Students submitting this form should obtain signatures from the faculty advisor and the course instructor and submit the completed form to Rose West, for approval of the EER Program Director. This form can be obtained on the EER website (http://www.hsph.harvard.edu/eer/waiver.pdf).

Presentation to EER Faculty

In addition to taking the Research Design course (EH520), each EER doctoral student is required to conduct an informal 10-minute presentation of proposed thesis research at an EER Faculty Meeting. This presentation should be done prior to scheduling the Oral Qualifying Exam and the primary purpose is to acquaint the EER faculty with the students' programs and to give the faculty an opportunity for suggestions, and guidance. It also gives each student practice in oral presentation, which is useful preparation for the Oral Qualifying Exam. To schedule your presentation, please contact Rose West (617-384-8824, rwest@hsph.harvard.edu).

Final Program

Students submit their final programs, including nominees for the Oral Qualifying Examination, to Barbara Zuckerman, for approval of Dr. Dockery. Students in joint degree programs must obtain approval from the Chairs of both departments.

Final Programs with Department approval are submitted to the Committee on Admissions and Degrees (CAD) for review and approval. At least two members of the Oral Examining Committee must hold Harvard TH Chan School faculty appointments in disciplines representing the major field(s) as well as the minor field(s). With the approval of the CAD, other members of the committee may include faculty members with relevant expertise from outside Harvard. The CAD reviews the Final Program and proposed examination committee, and appoints the chair of the committee. PLEASE NOTE that the EER Program does NOT allow EER faculty advisors to serve on their own student's Oral Examining Committee.

Once the CAD has approved the Final Program, students must submit a research proposal to their Oral Examining Committee and the Registrar's Office approximately three weeks prior to the exam. The usual format of the research proposal should be similar to that submitted to a granting agency or foundation and should include research objectives, methods of procedure, anticipated problems and results, and the overall significance of the research. For an example, please see the National Institutes of Health (NIH) website for guidelines:

http://grants.nih.gov/grants/grant_basics.htm

The proposal should consist of approximately 20 pages of text, not including references and appendices.

Information on the preparation of the thesis is available on the website for the Office of the Registrar:

http://www.hsph.harvard.edu/registrar/dissertation-guidelines/

Thesis Defense

Four weeks prior to scheduling the thesis defense, a draft copy of the thesis must be submitted, along with a Dissertation Defense Scheduling Form (http://cdn1.sph.harvard.edu/wp-content/uploads/sites/47/2012/09/dissertation-schedule.pdf) and the proposed date of defense, to Barbara Zuckerman, for review and title approval by the Department Chair. The approved thesis scheduling form and the dissertation will then be submitted to the Registrar’s Office at least three weeks prior to the exam, for the announcement of the defense to be placed on the HSPH event calendar. PLEASE NOTE that the defense is not valid and the student cannot be recommended for the degree without this public announcement.
An electronic copy of the thesis must be also sent to Rose West, who will make this copy available to EER Faculty who may wish to review it.

Please Keep Your Files Up-to-Date

Please help the EER Program keep student files up-to-date. Students are asked to submit copies of information relevant to your academic program—including petitions for program changes (waivers, etc) and other documents to Rose West. Please also contact Rose with address changes and forwarding address information before graduation.

Useful Websites:

Students are encouraged to visit the following websites:

Harvard School of Public Health Office of the Registrar:
http://www.hsph.harvard.edu/administrative-offices/registrar/

Harvard School of Public Health Student Handbook:
http://www.hsph.harvard.edu/academics/student-handbook/

The Harvard University Center for the Environment (HUCE):
http://www.environment.harvard.edu/

Harvard University:
http://www.harvard.edu/

Massachusetts Institute of Technology:
http://web.mit.edu/
## THE DOCTORAL STUDENT TIMETABLE

<table>
<thead>
<tr>
<th>PROGRESS</th>
<th>PROGRESS DUE</th>
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</thead>
<tbody>
<tr>
<td>1 Submission of Prospective Program Form</td>
<td>End of 2nd Semester, but no later than the end of the 3rd semester with permission*</td>
</tr>
<tr>
<td>2 Submission of Final Program Form</td>
<td>End of 5th Semester*</td>
</tr>
<tr>
<td>3 Submission of Oral Qualifying Examination Scheduling Form</td>
<td>End of 6th Semester*</td>
</tr>
<tr>
<td>4 Submission of Nominations for Research Committee Form</td>
<td>One month after successful completion of Oral Examination</td>
</tr>
<tr>
<td>5 Submission of Progress Report Form</td>
<td>Six months after passing Oral Examination. Must be submitted at least twice a year thereafter until dissertation defense.</td>
</tr>
<tr>
<td>6 Submission of Application for Degree Form</td>
<td>Before degree granting period in which dissertation is defended</td>
</tr>
<tr>
<td>7 Dissertation Defense</td>
<td>End of 5th year for full-time students</td>
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<td></td>
<td>End of 7th year for part-time students</td>
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* Double the time for part-time students.

Full-time doctoral students have five academic years from date of entry into the program to complete required course work, and to defend and to submit the dissertation. Any deviation from the five-year limit must be approved by the CAD prior to the second semester in the fifth year. Part-time students have seven academic years from date of entry to complete degree requirements, and any deviation from this limit must be approved by the CAD prior to the second semester in the seventh year.