Doctor of Philosophy
Environmental Health
Program Guidebook 2019-2020
DEPARTMENT OF ENVIRONMENTAL HEALTH FACULTY

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General info, questions,  Birgit Claus Henn  bclaus@bu.edu
academic Issues  PhD Program Director  617-358-2459
Registrar’s Office  Nikki Longe  nlonge@bu.edu
                        BUSPH Registrar  617-358-3434

Boston University Policy Statement
Boston University and the Boston University School of Public Health reserve the right to change the policies, curricula, or any other matter in this handbook without prior notice. Students will be notified of major changes as soon as practicable after they are decided.
Welcome to the Department of Environmental Health!

We have developed this guide to help you navigate the requirements of our PhD program and familiarize you with the opportunities and resources available to our students. In addition to this guide, you can also consult the BUSPH website and Bulletin to stay informed about departmental and school-wide policies and procedures.

As a student in our PhD program, you will have office space on the 4th or 5th floor of the Talbot Building. This allows our students to sit in close proximity to each other and to the faculty members in the department, just one aspect of the collegial atmosphere in which faculty members are readily available to assist students.

We do not expect our entering doctoral students to know exactly what project they would like to serve as the basis for their dissertation research. Accordingly, our research rotation program is designed to assist students in the process of identifying a dissertation topic, providing an opportunity to not only gain experience on different projects but also in working with different faculty members. Examples of ongoing research in the department are listed on our website.

You should have received your advisor assignment and have hopefully had the opportunity to meet and discuss your plan for your first semester. During your first two years, your advisor will help you select courses, help to select and arrange research rotations, and work with you to develop and refine your plans for a dissertation topic. Your current advisor was assigned based on your mutual research interests, but it is not uncommon for students to change advisors as dissertation plans develop.

As director of the PhD program, I am one of your primary resources during your time in our program. I am pleased that you have decided to join the graduate student community in the Department of Environmental Health at BUSPH and I look forward to working with you in the coming years.

Sincerely,

Birgit Claus Henn, MPH, ScD
Doctoral Program Director
Department of Environmental Health
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# QUICK REFERENCE GUIDE

Please see the SPH Bulletin (http://www.bu.edu/academics/bulletin/)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Office &amp; Contact Info</th>
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</thead>
</table>
| **Course Materials**                        | **Online**: Course information, assignments, and syllabi are often posted on a course webpage at learn.bu.edu.  
**Course Readers and textbooks** are available for purchase through Barnes & Noble bookstore located at 660 Beacon Street, Kenmore Square, Boston University Charles River Campus. |
| **Careers**:                                 | **Career Center**: http://www.bu.edu/sph/careers/  
Talbot 1 East  
Maria McCarthy, mamcc@bu.edu, 617-358-4050  
Lisa Toby, ltoby@bu.edu, 617-358-4078  
Julia Lanham Weston, jlanham@bu.edu, 617-358-4085  
Gwenn Fairall, gfairall@bu.edu, 617-358-4082  
Marie Daniel, mariemda@bu.edu, 617-358-4084  
Stern Chamblain Jr, sternjr@bu.edu, 617-358-1731 |
| **Financial Assistance**                    | **Office of Student Financial Services**: http://www.bumc.bu.edu/osfs/osfs-sph@bumc.bu.edu or 617-358-6550  
**Financing Your Education**: http://www.bu.edu/sph/admissions/financing-your-education/ |
| **Housing**                                  | **Office of Housing Resources**: http://www.bumc.bu.edu/ohr/                                                                                                                                                    |
| **Library Resources**:                       | **Alumni Medical Library**: http://medlib.bu.edu/  
L Building, 12th Floor  
617-358-2350  
**Boston University Library Network**: http://www.bu.edu/library/ |
| **Parking and Transportation**:             | **Office of Parking and Transportation Services**: http://www.bumc.bu.edu/parking/  
710 Albany Street  
617-638-4915                                                                 |
| **Registration**;                            | **Registrar’s Office**: https://www.bu.edu/sph/students/advising-and-registration/courses-and-academic-resources/  
Talbot 1 West  
Nikki Longe, nlonge@bu.edu, or Amelia Williams, awilliams@bu.edu  
617-358-3434  
Degree students register online at http://www.bu.edu/studentlink  
Unofficial transcripts available at http://www.bu.edu/studentlink  
Official transcripts available at http://www.bu.edu/reg/ |
| **Registration Directions**                 | **How to register on the StudentLink**: https://www.bu.edu/sph/files/2019/03/Course-Planning-and-Registration-Guide_031219.pdf                                                                                   |
| **Student Health and Behavioral Medicine**  | **Student Health Services**: http://www.bu.edu/shs/  
881 Commonwealth Avenue  
617-353-3575                                                                 |
| **Student Services**:                        | **Office of Student Services**: http://www.bu.edu/sph/students/  
Talbot 2 Center  
Mary Murphy-Phillips, mcmurph@bu.edu, 617-358-1750 |
| **Subject**                                  | **Office & Contact Info**                                                                                                                                                                                                 |
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**Financing Your Education**: http://www.bu.edu/sph/admissions/financing-your-education/ |
| **Housing**                                  | **Office of Housing Resources**: http://www.bumc.bu.edu/ohr/                                                                                                                                                    |
| **Library Resources**:                       | **Alumni Medical Library**: http://medlib.bu.edu/  
L Building, 12th Floor  
617-358-2350  
**Boston University Library Network**: http://www.bu.edu/library/ |
| **Parking and Transportation**:             | **Office of Parking and Transportation Services**: http://www.bumc.bu.edu/parking/  
710 Albany Street  
617-638-4915                                                                 |
| **Registration**;                            | **Registrar’s Office**: https://www.bu.edu/sph/students/advising-and-registration/courses-and-academic-resources/  
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Degree students register online at http://www.bu.edu/studentlink  
Unofficial transcripts available at http://www.bu.edu/studentlink  
Official transcripts available at http://www.bu.edu/reg/ |
| **Registration Directions**                 | **How to register on the StudentLink**: https://www.bu.edu/sph/files/2019/03/Course-Planning-and-Registration-Guide_031219.pdf                                                                                   |
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881 Commonwealth Avenue  
617-353-3575                                                                 |
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Talbot 2 Center  
Mary Murphy-Phillips, mcmurph@bu.edu, 617-358-1750 |

Subject          | Office & Contact Info                                                                 |
IMPORTANT DATES THROUGHOUT THE ACADEMIC YEAR

Boston University School of Public Health (BUSPH), like other schools & programs on the Medical Campus, maintains its own academic calendar. It is important that students always refer to the BUSPH registration packets, academic calendar, and websites for SPH-specific information. That said, SPH endeavors to align its schedule with the Charles River Campus schedule while still allowing for 14 class meetings for our four-credit courses.

Academic Calendar and Course Schedules

Visit the Registrar’s Office website to learn more about important dates on the academic calendar such as holidays and exam dates (https://www.bu.edu/sph/students/advising-and-registration/academic-calendar/course-meeting-dates/). Also available on this page are course schedules, registration information, and more. The following table includes dates that are especially important for your consideration as a doctoral student, although this serves as an example only, as the particulars of the years will not apply to you specifically:

<table>
<thead>
<tr>
<th>Doctoral Graduation Calendar Example</th>
<th>September Award</th>
<th>January Award</th>
<th>May Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctoral Candidates (DrPH/PhD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduation Application</td>
<td>June</td>
<td>August</td>
<td>January</td>
</tr>
<tr>
<td>(submitted to the BUSPH Registrar)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last Date to hold Dissertation Defense</td>
<td>August</td>
<td>November</td>
<td>April</td>
</tr>
<tr>
<td>Deadline for Submission of Approved and Signed Dissertation*</td>
<td>August</td>
<td>December</td>
<td>April</td>
</tr>
</tbody>
</table>

*Dates are subject to change

School of Public Health Policy on Religious and Government Holidays

The School, in scheduling classes on religious or government holidays, intends that students observing these holidays be given ample opportunity to make up work. Faculty members who wish to observe such holidays will arrange for another faculty member to meet with their classes or for cancelled classes to be rescheduled.

Emergency Cancellation Information

In the event of an emergency or class cancellation, notices will be posted to the BUSPH student web site (http://www.bu.edu/sph/students/). Email messages will also be sent to faculty, staff and students in the event of closings. A message will also be posted to the BUSPH main telephone number: 617-638-4640. Students will be notified by the instructor of make-up dates for any cancelled classes.

PLEASE NOTE: The Boston University Medical Campus has different closing policies from the Charles River Campus. Do not rely on information about the Charles River Campus or Boston University. Obtain information specific to SPH from the above resources.
The Environmental Health PhD Program

OVERVIEW

The Doctor of Philosophy (PhD) in Environmental Health program provides students with specialized training and research experience in environmental and occupational epidemiology, exposure science, spatial epidemiology/GIS, risk assessment, and toxicology. Interested doctoral students can also participate in the Graduate Program in Urban Biogeoscience and Environmental Health (URBAN), a traineeship that focuses on tackling urban environmental challenges through interdisciplinary training, workshops, and internships. For more details on requirements specific to URBAN, please see the URBAN website (https://sites.bu.edu/urban/). Our program is one of a small number of academic units nationally that specializes in investigating exposure-related health outcomes in community settings. The program provides knowledge, experience, and training in core disciplines to allow for critical thinking in research design, interpretation, and translation. Graduates of our doctoral program continue the department’s tradition of rigorous, innovative, and socially engaged research as postdoctoral research fellows and faculty members at academic research institutions, as senior scientists at environmental consulting companies, and as senior scientists at regulatory health agencies.

To receive the doctoral degree, candidates entering the doctoral program must complete the equivalent of 64 credits (16 graduate-level courses), complete three research rotations, pass a qualifying exam, and complete a dissertation. The research rotations begin upon entering the program and provide students the opportunity to develop research skills and clarify their research interests. URBAN internships can qualify as research rotation experiences. To prepare for their qualifying exam and to engage in dissertation research, students design a set of courses with their advisor, in addition to the core courses below. Candidates who have already earned a related master’s degree must take eight graduate-level courses (32 credits) beyond the master’s degree and at least 16 credits of the coursework must be in environmental health.

This guide describes each of the major elements and requirements of the PhD program, the role of faculty advisors in helping students navigate requirements and make decisions, and the administrative requirements of the program. The program requirements described here apply to all students entering the program in Fall 2019 or later. Students who entered the program before that time are encouraged to follow the structure described here to the extent feasible, but have the option of adhering to the prior doctoral program guidelines, and should consult with their advisor and/or program director about how best to proceed.

COMPETENCIES

Upon completing the PhD in environmental health, students will be able to:

- Communicate the basic characteristics of major chemical, physical and biological hazards and the properties that govern the hazards’ behavior in the environment;
- Explain the scientific characteristics (e.g. route of exposure, dose response, mode of action) of major chemical, physical, and biological hazards that result in human health risk;
• Explain and analyze genetic, physiologic, and social factors that affect the susceptibility to adverse health outcomes following exposure to environmental hazards;
• Critically evaluate and interpret the hypothesis, experimental design, methods and results presented in a paper from a technical journal article in an environmental health discipline (toxicology, epidemiology, exposure assessment, environmental policy);
• Identify data gaps and formulate testable hypotheses about critical questions in environmental health (epidemiology, toxicology, exposure assessment, environmental policy);
• Design and implement data collection strategies and rigorous evaluations to test hypotheses using novel or current techniques;
• Analyze and interpret environmental health data;
• Identify appropriate intervention strategies for specific environmental health problems;
• Prepare scientific manuscripts for publication in peer reviewed journals in the field of environmental health; and
• Communicate scientific results at national and/or international conferences in the field of environmental health.

ADVISING

Boston University offers its students an enormous array of intellectual opportunities and resources on both the Medical and Charles River Campuses. In addition to fulfilling the academic requirements, it is up to the student to make choices that best enhance their career preparation. To assist with these decisions, students will be assigned a faculty advisor upon accepting the School’s offer of admission. The student advisor is available to discuss coursework, research rotations, career paths, and other issues relevant to student success; however, while the advisor can help the student make the most of their investment, it is ultimately the student’s responsibility to meet administrative and academic requirements and deadlines.

In the EH PhD program, we recognize two distinct advising roles — the pre-dissertation advisor and the dissertation advisor. These two roles can be filled by the same faculty member or different faculty members, depending on which arrangement best serves the student’s needs. These advisors are responsible to advise the student on all aspects of progress through the doctoral program.

The pre-dissertation advisor is assigned to each accepted applicant by the EH MS/Doctoral Committee based on common research interests to ensure that formal advising is in place upon acceptance to the program. The pre-dissertation advisor meets with the student regularly, helping to select courses, arrange research rotations, and refine research interests.

The pre-dissertation advisor often continues as the dissertation advisor, though it is also acceptable for students to change advisors when research interests become more clearly defined and the student would be best served by such a change. If students wish to formally change their advisor, they must tell the EH Graduate Programs Administrator so the necessary changes can be made to their official student record. Each student’s dissertation advisor also serves as the chair of their dissertation committee. The dissertation advisor meets weekly with the student, providing scientific training and helping the student manage progress through the program.

If you have questions, concerns, or comments about the overall academic curriculum and policies of the concentration or the advising process, contact Caitlin Brand, the Graduate Programs Administrator at caibt@bu.edu or 617-358-2660, or Birgit Claus Henn, Doctoral Program Director, at bclaus@bu.edu or 617-358-2459.
Section 2

Course Requirements

Students begin coursework immediately upon entering the program. A student entering the program without prior graduate training must complete a minimum of 64 credits in graduate-level courses, as detailed below. A student entering the program with a related master’s degree must complete a minimum of 32 credits in graduate-level courses. However, all students must still meet the specific common course requirements and training area requirements of the program, and complete all relevant coursework, as detailed below.

Students are required to achieve a minimum grade of B in all required courses—each course required in the common curriculum—and maintain an overall GPA of 3.0.

The following pages provide a summary of the curriculum, which includes three categories of courses: the common curriculum, the training area requirements, and electives. The common curriculum consists of six courses that are required of all PhD students in the EH program. Together these courses provide students with a foundation in the science and methods of environmental health, including the translation of science into policy. Students who have previously taken statistics are encouraged to take one of two statistical computing courses (Introduction to Statistical Computing or Introduction to R) without first taking BS704 Introduction to Biostatistics. If a student does take BS704, this course will be counted as an elective in the PhD program.

The training area requirements consist of required courses in one of several options for specializing in training chosen by the student. Major training areas include environmental epidemiology, exposure assessment, or toxicology. Minor training areas include any of the major training areas as well as additional focused options. A student may design a training area and set of requirements if the student’s desired area of study is not otherwise achievable. In such cases, the student should consult with their advisor in developing the individualized training area, which must be approved in writing by the EH MS/Doctoral Committee.

Finally, each student works with their advisor to identify electives to complete at least the minimum required credits, though occasionally the nature of the student’s research interests requires coursework beyond the minimum credits. Courses required in training areas other than the student’s own may also be chosen as electives.

By taking four courses each fall and spring semester, most full-time students complete coursework within two academic years. However, in addition to these specific course requirements, the student is required to complete all courses determined to be relevant to the student’s research interests. This requirement
to complete all relevant coursework will sometimes mean that the student takes more than the minimum number of required credits.

During the summer semesters, doctoral students are expected to work on research rotations and/or dissertation-related activities. Doctoral students should not register for courses during the summer semesters.

### COURSEWORK FOR THE PhD PROGRAM IN ENVIRONMENTAL HEALTH

<table>
<thead>
<tr>
<th>Required Courses in the Common Curriculum</th>
<th>Cr.</th>
<th>Semesters</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH705 Toxicology for Public Health</td>
<td>2</td>
<td>Spring</td>
</tr>
<tr>
<td>EH710 Physiologic Mechanisms of Health &amp; Disease</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>EP714 Introduction to Epidemiology</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>EH730 Methods in Environmental Health Science</td>
<td>4</td>
<td>Fall, Spring</td>
</tr>
<tr>
<td>EH805 Environmental Health Science, Policy &amp; Law</td>
<td>4</td>
<td>Alt. Spring, even years</td>
</tr>
<tr>
<td>BS723 Introduction to Statistical Computing</td>
<td>4</td>
<td>Fall, Spring, Summer</td>
</tr>
<tr>
<td>OR BS730 Introduction to R: Software for Statistical Computing</td>
<td>4</td>
<td>Fall, Spring, Summer</td>
</tr>
</tbody>
</table>

When planning for qualifying exams, each student identifies one major and two minors from the training areas below. **A student should plan to take at least four courses beyond the required common courses to satisfy the major, and two courses beyond the required common core to satisfy each minor.** These training areas serve as the basis for their qualifying exam. Students and advisors work together to select appropriate courses in each of the training areas.

<table>
<thead>
<tr>
<th>MAJOR TRAINING AREAS: Additional Required Courses</th>
<th>Cr</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Epidemiology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EH757 Environmental Epidemiology</td>
<td>4</td>
<td>Spring</td>
</tr>
<tr>
<td>EP813 Intermediate Epidemiology</td>
<td>4</td>
<td>Spring</td>
</tr>
<tr>
<td>EP854 Advanced Epidemiology</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>BS852 Statistical Methods in Epidemiology</td>
<td>4</td>
<td>Fall/Spring</td>
</tr>
<tr>
<td>Exposure Assessment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EH804 Exposure Assessment</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>EH811 GIS in Public Health</td>
<td>4</td>
<td>Spring</td>
</tr>
<tr>
<td>EH872 Environmental Data and Exposure Modeling</td>
<td>4</td>
<td>Spring</td>
</tr>
<tr>
<td>BS805 Intermediate Statistical Computing &amp; Applied Regression Analysis</td>
<td>4</td>
<td>Fall/Spring/Summer</td>
</tr>
<tr>
<td>Toxicology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EH713 Molecular Biology &amp; Public Health</td>
<td>4</td>
<td>Spring</td>
</tr>
<tr>
<td>EH840 Advanced and Emerging Topics in Toxicology</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>EH866 Risk Assessment Methods</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>BS805 Intermediate Statistical Computing &amp; Applied Regression Analysis</td>
<td>4</td>
<td>Fall/Spring/Summer</td>
</tr>
</tbody>
</table>
Students are encouraged to consider a minor from the other major training areas or from the following training areas: Biostatistics, Community Based Research, Environmental Infectious Diseases, Environmental Health Policy, Urban Ecology and Climate Change and Risk Assessment. Courses to consider for requirements in these areas are included on the following page as well as additional electives, but should be tailored to meet the student’s specific needs in the context of a minor training area.

<table>
<thead>
<tr>
<th>MINOR TRAINING AREAS: Additional Suggested Courses</th>
<th>Cr</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH804 Exposure Assessment</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>EH840 Advanced and Emerging Topics in Toxicology</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>EH866 Risk Assessment Methods</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>PH731 Analytic Methods &amp; Management Strategies for Public Health Decision Making</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>PH801 Community-Engaged Research</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>PH825 Analysis of Emerging Infections Using the One Health Approach</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>EH757 Environmental Epidemiology</td>
<td>4</td>
<td>Spring</td>
</tr>
<tr>
<td>EH811 GIS in Public Health OR</td>
<td>4</td>
<td>Spring</td>
</tr>
<tr>
<td>SB818 Qualitative Research Methods</td>
<td>4</td>
<td>Fall/Spring</td>
</tr>
<tr>
<td>EP755 Infectious Disease Epidemiology</td>
<td>4</td>
<td>Fall/Spring</td>
</tr>
<tr>
<td>EP813 Intermediate Epidemiology</td>
<td>4</td>
<td>Fall/Spring</td>
</tr>
</tbody>
</table>

Students may take courses from other training areas as elective courses. Additionally, if a student wishes to be examined in a major or minor other than those above, they can work with their advisor to develop a plan, as described above. The following courses are strongly encouraged for consideration in such instances, as electives:

*GMS and GRS courses require pre-approval from program director and course professor

In meeting the course requirements described above, these specific restrictions apply:

- No more than 8 credits can be in the form of directed research/studies.
- With the exception of courses taken for the MS in the BUSPH Department of Environmental Health, courses counted towards a completed degree cannot be transferred for credit in the doctoral program, but may waive some requirements with the approval of the doctoral program director. If waiving courses, students must fill out the course transfer/waiver form.
- If taken prior to entering the doctoral program, the specific courses listed above will count towards the doctoral degree if the course was taken at Boston University not more than five years before entering the doctoral program.

Students may take courses at other accredited graduate schools and may be eligible to transfer these courses into BUSPH; however, transfer course credit may not exceed 8 credits, and may not reduce credits taken at BUSPH for the doctoral degree below 32 credits. For a previously completed course to be accepted for transfer credit, it must be a graduate-level course in which the student has received a grade of B or better and which has not been applied to meet the requirements of another degree program either at Boston University or elsewhere. The previously completed course must be relevant to the PhD program as determined by the Program Director, who must approve all transfer credits. The judgment of the EH MS/Doctoral Committee in this regard will be final. If transferring credits, students must fill out the course transfer/waiver form.
**Students who have completed all required coursework must register for EH980 Continuing Study in Environmental Health each Fall and Spring to maintain their status as registered full-time students (See Section 6).**

<table>
<thead>
<tr>
<th>Additional Elective Courses</th>
<th>Cr</th>
<th>Semesters</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPH EH735 Environmental Determinants of Infectious Diseases</td>
<td>2</td>
<td>Spring</td>
</tr>
<tr>
<td>SPH EH750 Water Quality and Public Health</td>
<td>2</td>
<td>Fall</td>
</tr>
<tr>
<td>SPH EH872 Case Studies in Environmental Decision-Making</td>
<td>4</td>
<td>Spring</td>
</tr>
<tr>
<td>SPH EH961 Directed Study (e.g. Molecular Toxicology, Neurotoxicology)</td>
<td>4</td>
<td>Fall/Spring</td>
</tr>
<tr>
<td>SPH BS750 Essentials of Quantitative Data Management</td>
<td>2</td>
<td>Spring</td>
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<tr>
<td>SPH BS805 Intermediate Statistical Computing &amp; Applied Regression Analysis</td>
<td>4</td>
<td>Fall/Spring/Summer</td>
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<tr>
<td>SPH BS825 Advanced Methods in Infectious Disease Epidemiology</td>
<td>4</td>
<td>Fall</td>
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<tr>
<td>SPH BS845 Applied Statistical Modeling and Programming in R</td>
<td>4</td>
<td>Fall</td>
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<tr>
<td>SPH BS853 Generalized Linear Models with Applications</td>
<td>4</td>
<td>Spring</td>
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<tr>
<td>SPH BS857 Analysis of Correlated Data</td>
<td>4</td>
<td>Spring</td>
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<tr>
<td>SPH EP721 Survey Methods for Public Health</td>
<td>4</td>
<td>Fall</td>
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<tr>
<td>SPH EP752 Cancer Epidemiology</td>
<td>4</td>
<td>Spring</td>
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<tr>
<td>SPH EP755 Infectious Disease Epidemiology</td>
<td>4</td>
<td>Fall/Spring</td>
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<tr>
<td>SPH EP758 Nutritional Epidemiology</td>
<td>4</td>
<td>Summer</td>
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<tr>
<td>SPH EP759 Reproductive Epidemiology</td>
<td>4</td>
<td>Fall/Spring</td>
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<tr>
<td>SPH EP763 Genetic Epidemiology</td>
<td>4</td>
<td>Fall</td>
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<tr>
<td>SPH EP775 Social Epidemiology</td>
<td>4</td>
<td>Fall/Spring</td>
</tr>
<tr>
<td>SPH EP857 Design and Conduct of Cohort Studies</td>
<td>2</td>
<td>Fall</td>
</tr>
<tr>
<td>SPH EP858 Design and Conduct of Case-Control Studies</td>
<td>2</td>
<td>Fall</td>
</tr>
<tr>
<td>SPH EP861 Quantitative Bias Analysis Methods for Epidemiologic Research</td>
<td>2</td>
<td>Spring (alt. years, odd)</td>
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<tr>
<td>GMS BI751 Biochemistry and Cell Biology</td>
<td>6</td>
<td>Fall</td>
</tr>
<tr>
<td>GMS BN798 Functional Neuroanatomy in Neuropsychology</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>GMS BN821 Seminar in Neuroimaging</td>
<td>2</td>
<td>Var.</td>
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<tr>
<td>GMS BT456 Endocrinology</td>
<td>4</td>
<td>Var.</td>
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<tr>
<td>GMS MI713 Comprehensive Immunology</td>
<td>4</td>
<td>Fall</td>
</tr>
<tr>
<td>GRS MA751 Advanced Statistical Methods II</td>
<td>4</td>
<td>Spring</td>
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</table>
Research Rotations and Training

RESEARCH ROTATIONS

Students are encouraged to become involved in research early in the program, while still taking courses. However, we do not expect our entering doctoral students to know exactly what project they would like to serve as the basis for their dissertation research. Accordingly, our research rotation program is designed to assist students in the process of identifying a dissertation topic, providing an opportunity to not only gain experience on different projects but also in working with different faculty members.

Specifically, during their first two calendar years of study, students are required to participate in three research rotations with faculty members. Students work with their advisor to select rotations based on their research interests. A research rotation has three components:

- At the beginning of each rotation, the project leader provides the student with background reading material, such as copies of proposals and relevant papers.
- Students engage in research activities and participate in meetings of the research group, which typically occur weekly or biweekly. At these meetings, the details of projects are discussed, including progress, problems, and new directions or interpretations.
- The student and project leader work together at the start of rotation to identify a final product, deliverable, or goal to be achieved by the end of the rotation. At the end of the rotation, student and project leader review the final product/deliverable/goal and discuss the student’s experience.

In some situations, research rotations are allowed to serve as the basis of a directed research course for which the student receives course credit. However, the student’s advisor and the rotation mentor must approve such an arrangement. Before the start of each research rotation, the student must complete a “Research Rotation Proposal” form, obtain the necessary signatures, and pass the form into the EH Graduate Programs Administrator.

For an overview of EH research examples, please visit http://www.bu.edu/sph/about/departments/environmental-health/research/.

RESEARCH TRAINING PROGRAMS

Each doctoral student is required to complete two Boston University training programs: training in the responsible conduct of research (RCR), which consists of four training sessions; and training in the protection of human research subjects. These training programs should be completed as early as possible, preferably during the first year of study.

DOCTORAL SEMINAR

All doctoral students are required to participate in the doctoral seminar, a weekly departmental seminar held during the fall and spring semesters, throughout their time in the program. This seminar series provides an opportunity for students to share ideas and research initiatives with fellow doctoral students and faculty, while gaining experience in making presentations to their professional peers.
Each doctoral student is required to give at least one presentation each year in the doctoral seminar (or at the annual research retreat) until he/she has completed the program. In preparing any seminar presentation, the doctoral student will work closely with their advisor in a structured process that includes at least one required practice presentation. Students will be given constructive feedback by their faculty advisors on their presentations.

**Doctoral students should not formally register for the seminar.

PROSEMINAR
In proseminar, doctoral students meet every other week during the fall and spring semesters to receive additional training in aspects of research that are often under-addressed as components of their coursework (e.g., grant writing, strategies for preparing a manuscript, strategies for managing data, etc). The first session of each semester is typically an update from the Department Chair (Dr. Jonathan Levy) who provides an overview of the latest activities/developments in the department and in the school as a whole, and the Doctoral Program Director (Dr. Birgit Claus Henn) who reviews expectations of doctoral students, and logistics of funding for the stipend and for research. Subsequent sessions then alternate between a topic session and lunch with a guest speaker, following the speaker’s presentation in doctoral seminar. The topic sessions are identified by the students, with oversight and input from the Doctoral Program Director. The final session of each semester is used as a student review session, in which doctoral students provide feedback to the Doctoral Program Director and/or Department Chair to be used as a basis for program enhancements.

JOURNAL CLUB
To enhance the training experience, doctoral students are expected to participate in journal club. Students meet approximately monthly to review and discuss a selected journal article. The topic sessions/articles are identified by the students. Journal club allows students to gain experience reviewing and critiquing scientific journal articles, stay abreast of the literature in the field, and become more familiar with diverse topics across the field of environmental health.
To be eligible to defend his/her dissertation, students must pass the **qualifying exam**, which covers specified areas of study and consists of a written and an oral component.

**MAJOR AND MINOR FIELDS OF STUDY**

The qualifying exam evaluates the student’s knowledge of core areas of environmental health, with particular emphasis on **one major and two minor fields**. These are areas in which the student has substantial preparation in the form of coursework and which are relevant to the student’s likely dissertation topic. A student should plan to take at least four courses beyond the introductory level in the major field and two courses beyond the introductory level in each minor field.

The exam also evaluates the student’s ability to synthesize information, organize thoughts, put those thoughts down on paper in a coherent fashion, to think on his/her feet, and handle the pressures of an oral presentation. Finally, preparation for the exam encourages synthetic, critical learning.

The following are examples of major or minor fields of study (*see section 2*):

- environmental epidemiology
- toxicology
- exposure assessment
- risk assessment
- community based research
- environmental infectious diseases
- environmental policy
- biostatistics

Working with his/her advisor, a student may choose major and minor fields (*see section 2*) from this list or define one or more areas of study tailored to his/her interests. The student must provide a written proposal for such a custom area of study, which must be approved by the EH MS/Doctoral Committee.

**APPLICATION TO TAKE QUALIFYING EXAM**

After completing all required coursework, each student must submit an application to the EH MS/Doctoral Committee for approval to take qualifying exams no later than the end of their fifth semester, and at least 2 months before he/she plans to take their qualifying exam. The application includes identification of one major and two minor fields, a summary of all completed course work in the form of an unofficial transcript, and a draft dissertation proposal, which is prepared by the student in collaboration with their faculty mentor in a format analogous to an application for a Public Health Service grant (PHS398). The proposal must include a clear statement of the goal(s) of the research project, descriptions of the study design and analyses to be performed, and a brief presentation of how this project will contribute to a scientific understanding of the problem. Requiring that a draft dissertation proposal be completed prior to qualifying exams ensures that the trainee has a plan for proceeding with research and provides the faculty...
examiners with information about that plan so that the written and oral exams can be designed accordingly. If the application is approved by the EH MS/Doctoral Committee then the student is allowed to schedule the exam; otherwise, the Committee communicates with the student’s advisor regarding the additional steps required.

The student must also submit a “Request to Complete Qualifying Exam” form. The form is to be completed by the student and the Examination Committee and returned to the EH Graduate Programs Administrator.

THE QUALIFYING EXAM

The members of the qualifying exam committee are selected by the EH MS/Doctoral Committee. The qualify exam committee includes three faculty members with expertise in the major and minor fields.

Written component:
Each student is assigned six published journal articles chosen by the examination committee; two papers in each of three topic areas. Students have one month to review the papers and related research. During the subsequent written examination, students are required to answer two of three analytic essay questions in each research training area based on the assigned papers. The written examination is administered by the Doctoral Program Director and/or Graduate Programs Administrator and is limited to 6 hours. Exceptions to the 6-hour time limit or other procedures will be made only for documented disabilities, and any such accommodations will follow the School-wide procedures already in place to conform to the Americans with Disabilities Act. Please contact Director of Student Services, Mary Murphy-Phillips at mcmurph@bu.edu or at 617-358-1750 for more information.

Committee members grade examinations and make one of three determinations: pass, conditional pass, or fail. The Doctoral Program Director communicates the results to the trainee within 3 days. In the event of a pass, the trainee is allowed to proceed with the oral exam. In the event of a conditional pass, the exam committee makes a recommendation to the EH MS/Doctoral Committee that specifies additional remedial activities to be completed by the student before proceeding to the oral exam. In the event of a fail, the committee will suggest remedial activities and the student will work with their academic advisor to construct a written plan for proceeding. Students who fail the written component of the qualifying exam will be given one opportunity to retake that component of the exam.

Oral component:
At the start of the oral exam, students give an oral presentation (approximately 20 minutes) of their draft dissertation proposal. The examination committee asks questions related to the three chosen topic areas, topics raised in the papers assigned for the written examination, and/or topics relevant to the proposed dissertation research. The oral exam lasts as long as committee members feel is necessary for rigorous evaluation of the student’s knowledge.

At the end of the oral examination, the committee immediately confers to evaluate the student’s performance and recommends a pass, a conditional pass, or a fail. In the event of a pass, the student is allowed to form a dissertation committee and proceed with full-time dissertation research. In the event of a conditional pass, the exam committee makes a recommendation to the EH MS/Doctoral Committee that specifies additional remedial activities to be completed by the student, at which time the student would be awarded a pass. In the event of a fail, the committee will suggest remedial activities and the student will work with their academic advisor to construct a written plan for proceeding. Students who fail the oral component of the qualifying exam will be given one opportunity to retake that component of the exam.
The student may begin working with faculty members on research at any time after starting the program.

**DISSERTATION ADVISOR AND DISSERTATION COMMITTEE**

Upon passing qualifying exams, the student works with their dissertation advisor to form a dissertation committee. The committee should consist of at least three faculty members, including the dissertation advisor who serves as committee chair. Additionally, at least one member must have an appointment in the Department of Environmental Health.

The doctoral student must submit a “Request to Form Dissertation Committee” form to the Doctoral Program Director naming the topic of the proposed research and listing the proposed dissertation committee, with a brief description of each proposed committee member. The Director will circulate the form to the EH MS/Doctoral Committee, which must approve the dissertation committee before the doctoral student may formally begin work with the committee. If the EH MS/Doctoral Committee raises concerns about the composition of the dissertation committee, the student will be asked to meet with the Committee to consider those concerns. After the form is completed and approved it should be returned to the EH Graduate Programs Administrator.

The dissertation advisor meets weekly with the student, providing scientific training and helping the student manage his/her progress through the program. The student is expected to meet with the full dissertation committee at least once a semester. Committee members mentor the student in carrying out the research and writing papers, and help the student manage the timing of their progress through the program.

The student is required to form his/her dissertation committee no later than 6 months after passing the qualifying exam.

**RESEARCH PROPOSAL(S)**

The student is required to write a research proposal for his/her planned research. The research proposal serves important purposes: it obliges the student to clarify the conceptual basis of his/her work and state the research question(s) being addressed; it forces detailed planning of the work itself; it gives the student experience in the professional skill of proposal writing; and it serves as an agreement between the student and his/her committee about the research work to be done.

As described in Section 4, a draft of the proposal is prepared in collaboration with the advisor prior to taking the qualifying exam. However, since a student does not form a dissertation committee until after passing the qualifying exam, the proposal must be reviewed and approved by the dissertation committee.

Each proposal must demonstrate to the student’s dissertation committee that the student understands how to do the research at hand and has a plan for accomplishing the work. Specifically, each research proposal must include a section on the background and significance of the planned work; the research
question(s) being addressed; the specific aims of the planned work; and a detailed description of the study design, the planned data collection (if any), and the planned data analysis. Finally, the proposal must articulate, to the satisfaction of the EH MS/Doctoral Committee, why the proposed research falls within the domain of environmental health.

**Dissertation**

The dissertation includes an abstract, an introduction (Chapter 1), three publishable papers (Chapters 2-4), and a conclusion (Chapter 5). All doctoral dissertations must be formatted according to the guidelines described in the “Research Guide for Writers of Theses and Dissertations,” which is available at: [http://library.bu.edu/theses](http://library.bu.edu/theses). All text should be Times New Roman, 12 pt, and double-spaced.

The abstract should contain a clear and brief statement of the problem, the procedure(s) and/or method(s) followed, the results, and the conclusions. The abstract should be prepared carefully, as it will be published in ProQuest’s *Digital Dissertations/Dissertation Abstracts International*. The abstract is limited to 350 words.

The introduction (Chapter 1, approximately 8-10 pages) should provide the background and significance of the research, summarize the relevant literature, and identify the gaps so that the reader appreciates the need for the new research. The introduction should provide a broader context than the background included in each of the three papers. The introduction should conclude with a brief overview of the three papers.

Chapters 2-4 take the form of three papers meeting current standards of publication in peer-reviewed journals (e.g., *Environmental Health Perspectives*, *Environmental Science & Technology*, *Journal of Exposure Science & Environmental Epidemiology*, *Journal of Occupational & Environmental Hygiene*, *Annals of Occupational Hygiene*, *American Journal of Industrial Medicine*, etc.). The papers must be original work by the student; a review article does not meet this standard. Further, at least two of the three papers that make up a dissertation must be closely related, forming a body of work.

The student must be first author on at least two of the papers. It is acceptable for the student to be second author on one paper if, in the opinion of the dissertation committee, the student has made a substantial intellectual contribution to both the research and the writing of the paper.

The conclusion (Chapter 5, approximately 8-10 pages) should summarize and integrate the findings of the three papers, describe the key limitations of the research, describe the public health implications of the findings, and indicate next steps for related research. The conclusion should do more than simply restate the findings of each paper, and instead should integrate the three papers conceptually, and place the research in an environmental health framework.

A copy of your dissertation must be submitted to your outside reader at least 3 weeks before your defense date. Another copy of your dissertation should be made available to the Department at least 2 weeks before your defense date. This Department copy does not need to meet the Mugar Memorial Library specifications.

**Outside Reader**

The dissertation committee selects an outside reader for the student’s dissertation. The outside reader cannot be an author on any of the papers that make up the student’s dissertation and is generally from outside the Boston University School of Public Health; however, an outside reader from within the Boston University School of Public Health may be allowed if approved by the EH MS/Doctoral Committee.
The outside reader does not participate in the research itself, but rather reviews and comments on the dissertation, including the research approach and the work’s relevance or contribution to the field. The outside review takes place after the dissertation has been completed and before the dissertation defense, allowing the student time to make revisions in response to the outside reader’s comments. The outside reader also participates in the dissertation defense.

**APPROVAL OF DISSERTATION**

The completed dissertation—including abstract, introduction, and conclusion—must be submitted to and approved by the dissertation committee and the outside reader before the student can formally announce his/her defense. However, to accommodate the practical scheduling issues, the student is encouraged to schedule a tentative date for the dissertation defense prior to receiving these approvals.

**DISSERTATION DEFENSE**

The student must pass the defense within 7 years of starting the program (excluding formal leaves of absence). The dissertation defense can be formally scheduled only after:

- the student has passed the qualifying exam; and
- the completed dissertation has been submitted to and approved by the dissertation committee and outside reader.

Students must notify the Doctoral Program Director, BUSPH Registrar, and EH Graduate Programs Administrator of the dissertation defense date **no later than 30 days prior** to the defense. The dissertation defense is a public event to which all faculty and doctoral students in the department are invited. The dissertation defense must be formally scheduled and the date publicly announced at least 2 weeks before the event. At least 2 weeks prior to their dissertation defense, the doctoral student must submit their dissertation electronically to the EH Graduate Programs Administrator for their record and for anyone to read. Once approved by their dissertation committee and submitted to the library, the doctoral student must re-submit their dissertation electronically to the EH Graduate Programs Administrator for their record.

At the defense, the student first presents his/her research for approximately 45 minutes to one hour. The dissertation advisor then invites questions, first from the dissertation committee and outside reader, and then from others. Anyone present may ask questions of the student, subject to the discretion of the chair. Following the defense, the thesis committee and the outside reader confer and must agree on final approval for granting of the doctoral degree. The doctoral student must complete an “Approval to Grant PhD in EH” form and return to the EH Graduate Programs Administrator. The doctoral student must reach out to the Library regarding additional paperwork that their dissertation committee must sign, prior to their oral defense (see section 6).

Dates included in the Doctoral Graduation Calendar represent the absolute deadlines (in each semester) for holding a dissertation defense. (Please see the “Doctoral Graduation Calendar” at the beginning of this guidebook.) When scheduling their dissertation defense, students should allow sufficient time for making any final revisions recommended by their doctoral dissertation committee prior to the absolute deadline for submitting the approved dissertation to the Mugar Memorial Library. The doctoral candidate and all dissertation committee members must participate in the dissertation defense on the selected defense date. Both the doctoral candidate and the dissertation committee chair must be available on the selected defense date to appear in person at the defense, which must be held on the BU Medical Campus. Other
committee members should appear in person for the defense; however, if they cannot, they may make arrangements to participate remotely.

Within one week after the dissertation defense, the dissertation committee chair must send written notification of the outcome of the defense to the Doctoral Program Director.

**DISSERTATION SUBMISSION**

All theses and dissertations will be submitted to the Mugar Library electronically. Please visit [http://www.bu.edu/library/guide/theses/](http://www.bu.edu/library/guide/theses/) for a series of brief, informative videos that detail the submission process. A PDF guide is also available.

Conferment of the doctoral degree is contingent upon receipt of the dissertation final draft by the deadlines established by the Doctoral Graduation Calendar. Students must present the BUSPH Registrar with the “Signed Approval Page”, signed by the student’s first reader/committee chair, when the Registrar completes the dissertation transmittal paperwork. Failure to do so by the established deadline will require that the student submit a new graduation application and will defer the student’s graduation to the following semester. Students must review the formatting of their approval page with Brendan McDermott, Thesis & Dissertation Coordinator, Mugar Memorial Library, Room 306 (brendan@bu.edu) before it is signed by your readers. The signed approval page will be uploaded separately from your dissertation or thesis as an administrative document. You can upload the page on your own or send an electronic copy to Nikki Longe (sphregr@bu.edu), BUSPH registrar. The approval page in the uploaded dissertation or thesis should remain blank. The original page should be delivered to Brendan McDermott.

Please note that, to be accepted by the Mugar Memorial Library, all doctoral dissertations must be formatted according to the guidelines described in the “Research Guide for Writers of Theses and Dissertations,” which is available at: [http://www.bu.edu/library/guide/theses/](http://www.bu.edu/library/guide/theses/).

Students with questions about formatting or the dissertation submission process should contact Brendan McDermott, Thesis and Dissertation Librarian at the Mugar Memorial Library, at brendan@bu.edu.
All students must adhere to all Boston University School of Public Health academic policies, available at [http://www.bu.edu/sph/students/resources/policies/](http://www.bu.edu/sph/students/resources/policies/), and the University’s Administrative Policies, available at [http://www.bu.edu/dos/policies/lifebook/](http://www.bu.edu/dos/policies/lifebook/).

### INTERNATIONAL STUDENTS

**International Students and Scholars Office (ISSO)**

The ISSO provides professional expertise on immigration and employment issues to students, faculty, and staff at Boston University.

**ISSO Office Hours**

- Monday, Tuesday, Thursday, and Friday: 9:00AM - 5:00PM
- Wednesday: 12:00PM - 5:00PM (closed every Wednesday morning until 12:00PM)

**Contact Information:**

- 888 Commonwealth Avenue, 2nd Floor
- Boston, MA 02215
- Phone: (617) 353-3565
- Fax: (617) 358-1170
- Email: isso@bu.edu

Students who have any questions regarding their required registration or necessary documents for travel or study should contact the ISSO.

**Maintaining Visa Status**

To remain lawfully in the United States during their doctoral studies, international students must obey the laws regulating F-1 and J-1 visa status. These regulations include, but are not limited to, registering for a fulltime course of study (whether by taking 12 or more credits or via registering for Continuing Study during all fall and spring semesters), limiting travel outside the U.S. to no more than 5 months at a time, and maintaining a current and valid I-20. For a complete discussion of these requirements, please visit the ISSO website:

- Students on an F-1 visa: [http://www.bu.edu/isko/students/current/f1/status/](http://www.bu.edu/isko/students/current/f1/status/)
- Students on a J-1 visa: [https://www.bu.edu/isko/administrators/advising-current-students/j1/](https://www.bu.edu/isko/administrators/advising-current-students/j1/)

**Completing the Dissertation**

Regardless of when they participate in graduation ceremonies, international students officially complete their doctoral studies when they submit the final version of their dissertation and when Boston University certifies that they have successfully completed all degree requirements. Please note that all students who will complete and submit their dissertation during the summer must be registered as continuing students.
during the summer semester to maintain lawful F-1 status. Otherwise, students must register in every fall and spring semester.

**GRADING STANDARDS, SATISFACTORY ACADEMIC PROGRESS, AND DISMISSAL**

**Grading Standards**
All SPH degree candidates must earn a minimum 3.0 GPA each semester to be in good academic standing and must have a minimum 3.0 GPA at SPH to graduate. Additionally, students in the PhD program in environmental health are required to achieve a minimum grade of B in all required courses—that is, in each course required in the common curriculum and each course required in the student’s chosen track.

Please see the BUSPH Grading Policy at [http://www.bu.edu/sph/students/resources/policies/](http://www.bu.edu/sph/students/resources/policies/) for information on grade changes and incomplete grades.

**Satisfactory Academic Progress**
Satisfactory academic progress will be assessed using the School of Public Health guidelines. More information on these guidelines can be found at the SPH Registrar’s Office or Student Services. In addition, the EH MS/Doctoral Committee may assess a student’s progress at any time, and may place the student on warning or probation if, in its opinion, it is determined that the student has not made adequate progress toward meeting graduation requirements. This includes but is not limited to if he or she has not submitted an application to take qualifying exams (including a dissertation proposal) within three years of entering the program, or has not shown adequate progress on his/her dissertation in the last year as represented in the required Student Annual Evaluation Report.

A student on warning status will need to meet with the Doctoral Program Director and develop a learning plan for the next two semesters. The student must also meet with the Doctoral Program Director at least twice in the semester.

If a student is placed on probation, the Doctoral Program Director will send the student a letter specifying the reason(s) for probation, what is required to be removed from probation, and the deadline by which the requirement(s) must be met. After the student has fulfilled the relevant requirement(s), he/she must write a letter to the Doctoral Program Director that describes these steps. The Doctoral Program Director will respond in writing with a determination of whether the student has met the requirements and is removed from probationary status or has not met the requirements and will remain on probation, or will refer the matter to the SAP Committee for further action.

**Dismissal**
A student who is on probation for not making adequate progress will be dismissed from the doctoral program if he/she does not demonstrate substantial progress during the specified probationary period, or does not meet the requirement(s) of probation by the deadline specified by the SAP Committee and/or the MS/Doctoral Committee.

A student who fails one of the qualifying examinations two times will be dismissed from the PhD program but may be eligible to be awarded the MS degree, provided that the degree requirements of that program have been met. Dismissal may also occur as a result of committing an act of academic dishonesty, as defined in the School’s policy on Academic Dishonesty and is final.
REGISTRATION REQUIREMENTS

All doctoral students at Boston University School of Public Health, regardless of citizenship or immigration status, must register each fall and spring semester during their doctoral program until they officially graduate. This includes those who are registering for continuing study. Doctoral students must complete a “Course Approval Form” and return to the EH Graduate Programs Administrator before registering every semester and whenever they add/drop a course after initially registering.

**Fall course registration**: Return form to Graduate Programs Administrator by July 1st.

**Spring course registration**: Return form to Graduate Programs Administrator by December 1st.

**No summer course registration.**

**Continuing Study**

International students holding F-1 or J-1 non-immigrant status and who are in residence at Boston University must meet the requirements of their visa, in particular full-time enrollment. Full-time enrollment is achieved by registration for 12 or more credits of academic coursework, or by registration in Continuing Study with additional full-time certification (“Certified Full-time”) coding by the SPH Registrar. International students must check in at the Boston University International Students and Scholars Office (ISSO) when they first arrive at Boston University and then complete “Semester Verification” in each subsequent semester to ensure that they remain in lawful status. Students who are not full-time by virtue of academic course load (12 credits or more) or who are not certified full time by enrolling in continuing study will be considered in violation of their immigration status. Students who violate their status are subject to the penalties prescribed in relevant immigration laws.

Students who are permanent residents or United States citizens must meet the requirements of their program and must register for either coursework or Continuing Study each fall and spring semester.

**Leaves of Absence**

A student may request a leave of absence of up to two semesters by writing a letter to the Doctoral Program Director and the BUSPH Registrar. Longer leaves of absence may be approved under compelling circumstances.

International students must have approval of ISSO to take a leave of absence and must work with ISSO when they are ready to return to their studies.

Students on leave of absence are not entitled to be advised officially by their advisers during a leave of absence, nor do they have library privileges. It has been possible for students on leave to maintain their ACS accounts.

**PROGRAM TIME LIMIT**

The Boston University School of Public Health requires all doctoral students to complete their degree requirements within 7 years of entering the doctoral program. A typical program might consist of the following: one to two years for completing the course work, one year for passing the qualifying examination/s and submitting a dissertation proposal, and two years for researching and writing the dissertation. Any extensions of the overall time limit must be requested in writing to the Doctoral Program Director with documentation of the extraordinary circumstances creating the delay and a date by which the requirements will be met. The request must be reviewed and approved by the EH MS/Doctoral/Post-
Doctoral Committee. A student who does not meet the time limits established by the program may be dismissed from the program without a degree.

**COURSE WAIVERS AND TRANSFER CREDIT (see section 2)**

Some SPH students enter their degree program having completed previous coursework that might help them meet degree requirements. Students with prior graduate-level course experience may be eligible to transfer a maximum of 8 graduate level credits toward their degree. The course must be degree-related and cannot have been used for another degree program. Other students may have the opportunity to explore coursework at other approved universities, including courses through the Boston Academic Consortium. Students must seek pre-approval before registering for courses for which they seek transfer credit.

The course waiver and credit transfer form must be filled out for every course that a student would like to waive or earn credit from. This form can be found here: https://www.bu.edu/sph/files/2019/08/Transfer-Credit-Waiver-Request_082919.pdf

The BUSPH course waiver and transfer credit policy is available at: http://www.bu.edu/sph/students/resources/policies/, and refer to section 2 for departmental guidelines.

**COMMUNICATIONS**

All official communications from BUSPH will be sent to your BU email so please be sure to activate a BU email account as soon as possible after you accept admission to the program. You may elect to have this email forwarded to an alternative email account if you wish. You should regularly check and clean out your BU email so that the mailbox has sufficient space to accept messages.

There are several ways to stay in touch with faculty and other students and to be informed about events and opportunities in the EH concentration.

- **EH Listserv:** You should receive a message in the first week of the semester with information. If you do not, please contact the EH Graduate Programs Administrator to be added to the EH PhD listserv.
- **EH website:** http://www.bu.edu/sph/academics/departments/environmental-health/
- **EH Facebook Page:** https://www.facebook.com/buenvhlth/
- **BUSPH website:** http://www.bu.edu/sph/
- **EH Calendar:** http://www.bu.edu/sph/academics/departments/environmental-health/environmental-health-calendar/
- **Student Resources:** https://www.bu.edu/sph/students/student-services/student-resources/ and also available in Student Services, Talbot 209 Center.
- **BUSPH Bulletin:** http://www.bu.edu/academics/bulletin/

**EVENTS**

Each month, BUSPH hosts several events designed to get students involved in the community and socialize with your fellow students. These opportunities include:

- **5 pm Socials:** Free food held in Chequer’s in the L-building basement 3-4 times per semester.
- **Student Meetings with the Dean:** Open discussions and free food for students to discuss issues they find important with the Dean of BUSPH, Sandro Galea.
Faculty

The Environmental Health Department faculty members are committed to their roles as teachers and mentors inside and beyond the classroom. Their research brings depth and a real-life context to the classroom. Research in the Department of Environmental Health spans epidemiology, toxicology, urban environmental health, and public policy.

Bios for the full- and part-time faculty can be found under the Faculty & Staff Directory tab at http://www.bu.edu/sph/about/departments/environmental-health/faculty-staff/.

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boden, Les</td>
<td>Professor</td>
<td><a href="mailto:lboden@bu.edu">lboden@bu.edu</a></td>
</tr>
<tr>
<td>Claus Henn, Birgit</td>
<td>Assistant Professor</td>
<td><a href="mailto:bclaus@bu.edu">bclaus@bu.edu</a></td>
</tr>
<tr>
<td>Fabian, Patricia</td>
<td>Research Assistant Professor</td>
<td><a href="mailto:pfabian@bu.edu">pfabian@bu.edu</a></td>
</tr>
<tr>
<td>Fidler, Anne</td>
<td>Associate Professor</td>
<td><a href="mailto:afidler@bu.edu">afidler@bu.edu</a></td>
</tr>
<tr>
<td>Heiger-Bernays, Wendy</td>
<td>Clinical Professor</td>
<td><a href="mailto:whb@bu.edu">whb@bu.edu</a></td>
</tr>
<tr>
<td>Janulewicz, Patricia</td>
<td>Assistant Professor</td>
<td><a href="mailto:paj@bu.edu">paj@bu.edu</a></td>
</tr>
<tr>
<td>Lane, Kevin</td>
<td>Assistant Professor</td>
<td><a href="mailto:klane@bu.edu">klane@bu.edu</a></td>
</tr>
<tr>
<td>Kinney, Patrick</td>
<td>Professor</td>
<td><a href="mailto:pkinney@bu.edu">pkinney@bu.edu</a></td>
</tr>
<tr>
<td>Leibler, Jessica</td>
<td>Assistant Professor</td>
<td><a href="mailto:jleibler@bu.edu">jleibler@bu.edu</a></td>
</tr>
<tr>
<td>Levy, Jonathan</td>
<td>Professor and Chair</td>
<td><a href="mailto:jonlevy@bu.edu">jonlevy@bu.edu</a></td>
</tr>
<tr>
<td>MacVarish, Kathleen</td>
<td>Associate Professor of Practice</td>
<td><a href="mailto:kmacvar@bu.edu">kmacvar@bu.edu</a></td>
</tr>
<tr>
<td>McClean, Michael</td>
<td>Professor</td>
<td><a href="mailto:mmcclean@bu.edu">mmcclean@bu.edu</a></td>
</tr>
<tr>
<td>Ozonoff, David</td>
<td>Professor</td>
<td><a href="mailto:dozonoff@bu.edu">dozonoff@bu.edu</a></td>
</tr>
<tr>
<td>Peters, Junenette</td>
<td>Assistant Professor</td>
<td><a href="mailto:petersj@bu.edu">petersj@bu.edu</a></td>
</tr>
<tr>
<td>Scammell, Madeleine</td>
<td>Associate Professor</td>
<td><a href="mailto:mls@bu.edu">mls@bu.edu</a></td>
</tr>
<tr>
<td>Schlezinger, Jennifer</td>
<td>Associate Professor</td>
<td><a href="mailto:jschezi@bu.edu">jschezi@bu.edu</a></td>
</tr>
<tr>
<td>Sherr, David</td>
<td>Professor</td>
<td><a href="mailto:dsherr@bu.edu">dsherr@bu.edu</a></td>
</tr>
<tr>
<td>Sullivan, Kimberly</td>
<td>Research Assistant Professor</td>
<td><a href="mailto:tty@bu.edu">tty@bu.edu</a></td>
</tr>
<tr>
<td>van Severent, Jean</td>
<td>Clinical Associate Professor</td>
<td><a href="mailto:jvsevent@bu.edu">jvsevent@bu.edu</a></td>
</tr>
<tr>
<td>Webster, Tom</td>
<td>Professor</td>
<td><a href="mailto:twebster@bu.edu">twebster@bu.edu</a></td>
</tr>
<tr>
<td>White, Roberta</td>
<td>Professor</td>
<td><a href="mailto:rwhite@bu.edu">rwhite@bu.edu</a></td>
</tr>
</tbody>
</table>

Adjunct Teaching Faculty

In addition to the faculty based at the School, BUSPH employs a number of experienced public health professionals from the community as adjunct faculty. These adjunct faculty members bring a wealth of information to the classroom as well as help build bridges between the communities that surround the Boston University Medical Campus. (list on next page)
<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benson, Eugene</td>
<td>Boston University</td>
<td><a href="mailto:ebbenson@bu.edu">ebbenson@bu.edu</a></td>
</tr>
<tr>
<td>Dodson, Robin</td>
<td>Silent Spring Institute</td>
<td><a href="mailto:redodson@bu.edu">redodson@bu.edu</a></td>
</tr>
<tr>
<td>Orlando, Laura</td>
<td>RILES</td>
<td><a href="mailto:orlando@riles.org">orlando@riles.org</a></td>
</tr>
<tr>
<td>Vorhees, Donna</td>
<td>Science Collaborative</td>
<td><a href="mailto:dvorhees@bu.edu">dvorhees@bu.edu</a></td>
</tr>
</tbody>
</table>
Student Progress

The Environmental Health MS/Doctoral Committee consists of the Chair of the department, the Doctoral Program Director, and several at-large members and is involved in many aspects of the doctoral program, as detailed below.

Summarized here are key points from the preceding sections of these program guidelines, pertaining to (a) key prerequisites or linkages between elements of the program; and (b) critical milestones that must be achieved for the student to continue in the program.

(a) The following are key prerequisites that must be met during the course of the program:

- before taking the qualifying exam, the student must complete all relevant coursework, submit a written request to take the exam at least 2 months before he/she plans to do so, and gain the approval of the EH MS/Doctoral/Post-Doctoral Committee to take the exam;
- each research proposal must be approved by the dissertation committee before the student begins data collection or data analysis (as appropriate);
- The dissertation defense can be formally scheduled only after the student has passed the qualifying exam, submitted the dissertation to the dissertation committee, and gained the dissertation committee’s approval of the dissertation.

(b) If a student fails to meet any of the following milestones, he/she is normally disqualified from continuing in the doctoral program. The student must:

- take the qualifying exam within 6 months of completing all relevant coursework;
- pass the qualifying exam on the first or second try;
- submit research proposal and obtain approval of proposal from dissertation committee within 18 months after passing qualifying exam from a dissertation committee within 6 months after passing the qualifying exam;
- pass the dissertation defense within 7 years of starting the program.

If a student fails to meet any of these milestones, he/she is normally disqualified from continuing in the program.

If a student encounters a circumstance that makes it impossible or burdensome for him/her to meet one of these milestones, the student may submit a written petition to the EH MS/Doctoral Committee requesting an extension. Only with the prior written approval of the EH MS/Doctoral Committee may exceptions to these guidelines be made.

ADMINISTRATIVE REQUIREMENTS AND INFORMATION
In addition to meeting the academic requirements of the doctoral program, the student must meet certain administrative requirements.
Tracking students' progress
The EH MS/Doctoral Committee will review each student’s progress every six months. Each student is responsible for completing a series of progress forms and submitting them to the student’s Advisor and to the Doctoral Program Director, or for seeing that the forms are completed and submitted by others (e.g., by members of the qualifying exam committee or dissertation committee). All completed forms must be submitted to the EH Graduate Programs Administrator. The forms are listed below and in Appendix D:

- waiver of courses and/or transfer of credits;
- course approval form
- research rotation proposal
- request to complete qualifying exam
- request to form dissertation committee
- approval to grant PhD in EH

Training as researchers
Each doctoral student is required to complete two Boston University training programs: training in the responsible conduct of research (RCR), which consists of four training sessions; training in the protection of human research subjects; and the Collaborative Institutional Training Initiative (CITI). These training programs should be completed as early as possible, preferably during the first year of study.

Experience in teaching
Serving as a paid teaching assistant (TA) is considered part of the doctoral student experience. Each doctoral student is required to work as a paid TA for at least one semester in a course at BUSPH, but may be asked to TA more than once. Teaching experiences are considered to be part of doctoral training and all doctoral students are expected to engage in teaching, with priority given to TAing in EH department courses.

Residence requirement
All doctoral students are required to spend a minimum of 6 semesters in residence during the course of their doctoral studies.

Continuing student status
After a student has completed the course requirements, he/she must maintain the status of full-time continuing student by registering for two credits each semester. This status is especially important for two groups of students: (1) those whose student loan payments can be deferred while they are full-time students, and (2) those with student visas that require them to be full-time students. Registering for continuing education requires the course approval form.

Funding for doctoral studies
Each student’s funding situation is different, and the specifics of funding (including research project/training grant and duration of funding) are included in each student’s acceptance letter. Faculty will assist students in identifying potential funding opportunities (e.g., from private foundations, STAR grants, etc.).

Continued funding is contingent upon the student’s meeting the requirements of the program as described in this handbook. If the student’s funding is jeopardized by his/her performance in the doctoral
program, the EH MS/Doctoral Committee will send a letter to the student describing their concerns and will meet with the student and his/her advisor to determine what needs to be done in order for the student to maintain his/her funding.

University requirements for the awarding of the PhD degree
Boston University will not confer the PhD degree unless certain requirements are met, including submission of an electronic copy of the student’s dissertation to the Boston University Mugar Library. The deadline for submission of the dissertation varies from year to year, but is typically at least one month before graduation.

The student is responsible to find out about, and meet, all University requirements for graduating with the PhD, as distinct from the departmental requirements described in these program guidelines.
Graduation Checklist

In addition to the checklist below, please obtain a graduation checklist from the BUSPH Registrar’s Office.

- There are graduation dates in September, January, and May of each year. To graduate on a specific date, **you must meet deadlines** – please see the BUSPH Registrar’s Office for updated deadlines and graduation application forms ([https://www.bu.edu/sph/students/advising-and-registration/](https://www.bu.edu/sph/students/advising-and-registration/) - under the Graduation tab).

- A copy of your dissertation must be submitted to your outside reader at least 3 weeks before your defense date. Another copy of your dissertation should be made available to the Department at least 2 weeks before your defense date. This Department copy does not need to meet the Mugar Memorial Library specifications.

- You must successfully defend your dissertation by the deadline associated with your target graduation date (see the BUSPH Registrar’s Office for updated deadlines: [https://www.bu.edu/sph/students/advising-and-registration/](https://www.bu.edu/sph/students/advising-and-registration/) - under the Graduation tab).
  - You must complete an “Approval to Grant PhD in EH” form following the defense and ensure that the EH Graduate Programs Administrator receives a copy for your official student file.

- Ask the Doctoral Program Director to confirm the defense outcome with the BUSPH Registrar’s Office.

- Pick up a Mugar Library transmittal form from SPH Registrar’s Office after the Doctoral Program Director has confirmed a successful defense.

- You must complete and print the signature page from the preliminary pages of your dissertation (directions and example of the preliminary pages can be obtained from Brendan McDermott, contact info below). The signature page must be signed by your dissertation committee and outside reader after your defense.


- Please check with Brendan McDermott regarding specific deadlines. All dissertations must be submitted to the Mugar Library electronically. Please visit [http://www.bu.edu/library/guide/theses/](http://www.bu.edu/library/guide/theses/) for a series of brief, informative videos that detail the submission process. A PDF guide is also available.

### Important Contacts:

<table>
<thead>
<tr>
<th>General info, questions, academic Issues</th>
<th>Birgit Claus Henn</th>
<th><a href="mailto:bclaus@bu.edu">bclaus@bu.edu</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>EH Doctoral Program Director</td>
<td>617-358-2459</td>
<td></td>
</tr>
<tr>
<td>Caitlin Brand</td>
<td><a href="mailto:caitb@bu.edu">caitb@bu.edu</a></td>
<td></td>
</tr>
<tr>
<td>EH Graduate Programs Administrator</td>
<td>617-358-2660</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Registrar’s Office</th>
<th>Nikki Longe</th>
<th><a href="mailto:nlonge@bu.edu">nlonge@bu.edu</a></th>
</tr>
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<tbody>
<tr>
<td>BUSPH Registrar</td>
<td>617-358-3434</td>
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<tr>
<th>Mugar Memorial Library</th>
<th>Brendan McDermott</th>
<th><a href="mailto:brendan@bu.edu">brendan@bu.edu</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Thesis/Dissertation Coordinator</td>
<td>617-353-9387</td>
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</table>
Students will meet many competencies as they complete the required courses within this program. The chart below explains how each course will lead to achieving various competencies.

<table>
<thead>
<tr>
<th>Competency</th>
<th>Course</th>
<th>Assessment</th>
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<tbody>
<tr>
<td>1. Communicate the basic characteristics of major chemical, physical, and biological hazards and the properties that govern the hazards’ behavior in the environment</td>
<td>EH705: Toxicology for Public Health</td>
<td>Homework 1: Students read an article about fracking. They must identify 3 toxic agents in fracking fluid and characterize them, identify the routes and timing of exposure for the general population and workers, identify potential adverse health outcomes. This assessment requires students to identify and classify multiple toxic agents and articulate those findings.</td>
</tr>
<tr>
<td>2. Explain the scientific characteristics (e.g., route of exposure, dose response, mode of action) of major chemical, physical, and biological hazards that result in human health risk</td>
<td>EH710: Physiologic Principles for Public Health</td>
<td>Homework #10: Apply knowledge of respiratory physiology to predict the effects of obstructive lung disease due to asthma, and restrictive lung disease due to pneumoconiosis on pulmonary function.</td>
</tr>
<tr>
<td></td>
<td>EH705: Toxicology for Public Health</td>
<td>Homework 10: Students construct a technical &quot;fact sheet&quot; for chlorpyrifos, including information on chemical characteristics, common routes of exposure, disposition, mechanisms of toxicity and regulatory values and what they are based on. Students must identify and communicate exposures, disposition, mechanisms of action and doses relevant to those mechanisms of action for chlorpyrifos.</td>
</tr>
<tr>
<td></td>
<td>EH730: Methods in Environmental Health Science</td>
<td>Problem Set 1: Students describe characteristics, sources and routes of exposure, toxicokinetics and mode of action for two different chemicals that are part of a provided dataset. Students must also construct a conceptual model that depicts how the chemicals are emitted, transported from environment to human receptor, and cause human health effects.</td>
</tr>
<tr>
<td>3. Explain and analyze genetic, physiologic, and social factors that affect the</td>
<td>EH710: Physiologic Principles for Public Health</td>
<td>Module Exam #1: Analyze serological data and determine previous exposure and occurrence of an infectious disease.</td>
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<tr>
<td>Competency</td>
<td>Course</td>
<td>Assessment</td>
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<tr>
<td>susceptibility to adverse health outcomes following exposure to environmental hazards</td>
<td>EH730: Methods in Environmental Health Science</td>
<td>Homeworks (all): Students are asked to use the exposure-disease model in a variety of situations. Examples include lead in tap water, PFAS in cooking pots, bacteria in foods, noise from airports, and students are asked to identify appropriate intervention strategies for specific environmental health problems, taking into consideration the factors that affect susceptibility to adverse health effects of these exposures.</td>
</tr>
<tr>
<td>4. Critically evaluate and interpret the hypothesis, experimental design, methods, and results presented in a paper from a technical journal article in an environmental health discipline (toxicology, epidemiology, exposure assessment, environmental policy)</td>
<td>EH730: Methods in Environmental Health Science</td>
<td>Problem Set 1: Students are asked to read and review a technical journal article in environmental health. They respond to questions about the study population, study design and data collection methods, interpretation of findings and limitations of the study.</td>
</tr>
<tr>
<td>5. Identify data gaps and formulate testable hypotheses about critical questions in environmental health (epidemiology, toxicology, exposure assessment, environmental policy)</td>
<td>EH730: Methods in Environmental Health Science</td>
<td>Environmental Data Collection and Analysis Project: This independent project allows each student to formulate a testable hypothesis regarding lead in garden soils or tap water, design a soil sampling or water sampling plan, collect samples, analyze the data (identifying data gaps) to evaluate human exposure to metals and make evidence-based predictions regarding health outcomes. Students present their conclusions in the context of existing policy.</td>
</tr>
<tr>
<td></td>
<td>EH805: Environmental Health Science, Policy, and Law</td>
<td>Chemicals Policy Debate (written component): Students research and present positions regarding the extent to which the Lautenberg Amendment to the Toxics Substances Control Act fills data gaps and critical questions in environmental health.</td>
</tr>
<tr>
<td>6. Design and implement data collection strategies and rigorous evaluations to test hypotheses using novel or current techniques</td>
<td>EH730: Methods in Environmental Health Science</td>
<td>Environmental Data Collection and Analysis Project: This independent project allows each student to use the literature to define a testable hypothesis, design a garden soil sampling or tap water sampling plan, collect samples and analyze the data with the objective of evaluating potential exposures to arsenic, manganese and lead. Students clean datasets, calculate summary statistics, conduct rigorous evaluations to test hypotheses using novel or current techniques.</td>
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<tr>
<td>Competency</td>
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<td>7. Analyze and interpret environmental health data</td>
<td>EH730: Methods in Environmental Health Science</td>
<td>Homeworks (all): Students access environmental health literature and databases (including CDC NHANES) for data for multiple regulated chemicals including lead in paint in residences, chlorpyrifos, flame retardants and perfluorinated chemicals and then they analyze and interpret environmental health data.</td>
</tr>
<tr>
<td></td>
<td>EH705: Toxicology for Public Health</td>
<td>Homework 2: Students are given dose response data. They are required to generate a dose response curve and to interpret dose response data. This assessment requires students to generate dose response analyses from primary toxicological data.</td>
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<td>Homework 4: Students assess the characteristics of a toxicant that will influence its absorption following oral exposure. They also calculate the bioavailability of a chemical via different routes of exposure and identify the route of exposure most likely to result in significant toxicity.</td>
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<td>Homework 6: Students analyze biotransformation data in several species and explain how differences in biotransformation relate to potential for toxicity indicated by difference in LD50s. Students also plot and evaluate elimination data. This assessment requires students to analyze and interpret biotransformation, toxicity and elimination data.</td>
</tr>
<tr>
<td>8. Identify appropriate intervention strategies for specific environmental health problems</td>
<td>EH730: Methods in Environmental Health Science</td>
<td>Homeworks (all): Students are asked to use the exposure-disease model in a variety of situations drawn from the literature, news cycle, experience of the instructors. Examples include lead in tap water, PFAS in cooking pots, bacteria in foods, noise from airports, and students are asked to identify appropriate intervention strategies for specific environmental health problems.</td>
</tr>
<tr>
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<td>Non-technical memo (to general audience): As part of the Environmental Data Collection and Analysis project, each student designs a soil sampling or water sampling plan, collect samples and analyze the data with the objective of evaluating exposures to arsenic, manganese and lead. They clean the datasets, determine whether the data are normally distributed (and if not, how to use them). They calculate summary statistics, compare the data with relevant standards and guidelines and the primary literature to interpret their findings in a single page memo and orally in order to identify appropriate intervention strategies for specific environmental health problems.</td>
</tr>
<tr>
<td>Competency</td>
<td>Course</td>
<td>Assessment</td>
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<tr>
<td>9. Prepare scientific manuscripts for publication in peer-reviewed journals in the field of environmental health</td>
<td>EH730: Methods in Environmental Health Science</td>
<td>EH data collection and analysis project, including technical report: students gain experience designing and carrying out a research project, including interpretation of results and writing a project summary. The technical report mimics a scientific paper.</td>
</tr>
<tr>
<td>10. Communicate scientific results at national and/or international conferences in the field of environmental health</td>
<td>Doctoral Dissertation</td>
<td>Submission, acceptance and presentation of oral and/or poster abstracts of scientific research at national and or international conferences (e.g., international Society for Environmental Epidemiology, International Society for Exposure Science, Society of Toxicology.)</td>
</tr>
</tbody>
</table>
Student Forms

All forms must be completed and returned to Department Graduate Programs Administrator after appropriate signatures have been collected.

1. **WAIVER OF COURSE(S) OR TRANSFER OF CREDITS**
   - Complete if necessary
   - Submit to SPH Registrar, advisor, doctoral program director, and EH Graduate Programs Administrator

2. **COURSE APPROVAL FORM**
   - Complete and Return to Graduate Programs Administrator before registering for courses (including auditing) and/or making schedule changes every semester
   - Submit to EH Graduate Programs Administrator

3. **RESEARCH ROTATION PROPOSAL**
   - Complete before the start of the research rotation
   - Submit to faculty research mentor, advisor, doctoral program director, and EH Graduate Programs Administrator

4. **REQUEST TO COMPLETE QUALIFYING EXAM**
   - Submit upon completion of coursework (by the end of the 5th semester)
   - Collect signatures from advisor, doctoral program director, and members of exam committee; return to EH Graduate Programs Administrator

5. **REQUEST TO FORM DISSERTATION COMMITTEE**
   - Submitted upon completion of the qualifying exam (within 6 months of passing exam)
   - Submit to advisor, doctoral program director, and EH Graduate Programs Administrator

6. **APPROVAL TO GRANT PHD IN ENVIRONMENTAL HEALTH**
   - Completed at Dissertation Defense
   - Submit to SPH Registrar, advisor, doctoral program director, and EH Graduate Programs Administrator