



Boston University School of Public Health
Department of Epidemiology



PhD Program Guidelines
2026-2027

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About the Boston University School of Public Health (BUSPH)

BUSPH Mission

To improve the health of local, national, and international populations, particularly the underserved, through excellence and innovation in education, research, and service.

BUSPH Values

Our values drive what we do and how we do it. We are deeply committed to igniting positive change in the world. We seek to create a respectful, collaborative, diverse, and inclusive community within BUSPH, and to promote justice, human rights, and equity within and across our local and global communities. We are bold in our pursuit of knowledge that matters, creative in our pursuit of solutions, and innovative in our education. In all we do, it is our engagement with people, communities, and institutions in the world beyond our academic walls that leads to success.

Accreditation

Boston University is accredited by the New England Commission of Higher Education. BUSPH is accredited by the Council on Education for Public Health (CEPH).

About This Guide

This guide is intended to be a description of the guidelines in effect for the PhD program in Epidemiology at BUSPH for the 2024-2025 academic year. Students matriculating in this academic year will be responsible for the requirements described within the 2024-2025 guidelines, as well as any additional University requirements described in the [Bulletin](#), throughout their academic tenure at the BUSPH.

Boston University, BUSPH, and the Department of Epidemiology reserve the right to change the policies, procedures, curricula, or any other matter and to cancel programs and courses at any time. This guide is not intended to be a contractual agreement, nor a guarantee of courses or programs described herein.

Important Dates throughout the Academic Year

BUSPH maintains its own academic calendar distinct from the Charles River Campus. It is important that students always refer to the BUSPH registration packets, academic calendar, and websites for BUSPH-specific information. That said, BUSPH aligns its schedule as much as possible with the Charles River Campus schedule, particularly for holidays, holiday replacement days, Intersession, and Spring Break.

Doctoral students should review the BUSPH Student Resources Page, <http://www.bu.edu/sph/students/sph-student-dashboard/> for forms, academic calendar, class meeting dates, registration information, and events calendars.

The Doctoral Student Organization

Doctoral students are encouraged to become involved in the Doctoral Student Organization, geared specifically towards connecting PhD and DrPH students at BUSPH. <http://www.bu.edu/sph/students/student-services/student-organizations/doctoral-student-organization/>.

Department of Epidemiology Contacts

Department Contacts:

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Shelley Barnes, Sr. Financial Administrator	sbbarnes@bu.edu
Samantha Haiken, Academic Program Administrator	shaiken@bu.edu

The table below details the responsibilities of the various members of the administrative team that oversees the doctoral program. This can be used as a guide regarding where to direct specific questions.

Program Director	Administrative Director	Academic Program Administrator	Sr. Financial Administrator
Jaimie Gradus	Susan Gomes	Samantha Haiken	Shelley Barnes
General oversight of all aspects of the program	Oversight of program finance Stipend/paycheck issues	Supports Director and EDC* TA and grader payments Social events	Travel Space Computers

*Epidemiology Doctoral Committee (EDC) Members:

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Welcome Letter

Dear PhD Student:

Welcome to Boston University School of Public Health's Epidemiology Doctoral Program. You are here because our faculty evaluated your background, potential, and ambitions and felt confident that you would succeed in our program. We anticipate that you will excel in the field and make valuable contributions to epidemiology and public health. We wanted to work with you, and help you prepare to pursue your goals. In the next few years, there is a lot to learn. This handbook will give you the policies, and you should review these carefully to understand the structure of the educational program.

Some of what you learn as a PhD student may feel like it comes easily, while some will initially feel impenetrable. Sometimes you will feel like a star, and -- if your experience is anything like mine was -- at times you'll feel like the task of graduate school is impossible. Please remember that the impossible periods will give way to success and let us know when you need help.

A few less formal pieces of advice (with thanks to my advisor years ago):

- You will get the most out of the PhD program if you tackle it enthusiastically, looking for opportunities within and outside of class to learn as much as you can. Get involved -the classroom is just one venue for resources - the School of Public Health and University are full of additional opportunities to encounter new ideas.
- Ask for challenges. Seek out settings to strengthen areas you feel weak.
- Ask for help when you are stuck.
- Help people around you. Providing you with awesome classmates may be one of our greatest gifts to you- please take advantage of their brilliance, their expertise, their enthusiasm, their hustle, and their kindness. And please be a resource to others. We are all here for the same reason- don't be embarrassed to geek out about the cool method you just read about, or ask questions about what you're learning, or talk about public health and what motivates you or infuriates you. Success in epidemiology is not a zero-sum game: helping those around you succeed will almost certainly spill over and help you too.
- You're a full human with a whole lot going on. That's a good thing, even if it means sometimes you have to draw boundaries about how much you can accomplish or pace yourself.
- In the next few years, you'll probably have a bunch of crazy research ideas. Write them down. Keep track - go back and revisit and refine as you progress through the program and onto your career. You'll want that list later.
- Keep a novel going.

We look forward to getting to know you better. Dr. Jaimie Gradus is the Director of the Epidemiology Doctoral Program, jgradus@bu.edu, and a terrific resource for questions about the program, career goals, and the field of epidemiology. Your advisor is another resource and probably the faculty member you'll see most often, but feel free to reach out to other faculty - including me - anytime. I love talking to students, about the program, what they're learning, and the science you're leading.



Maria Glymour, ScD, MS
Department Chair and Professor of Epidemiology

Section

1

Program Overview

These guidelines direct students through their doctoral studies in the Department of Epidemiology at BUSPH. The guidelines address requirements – such as coursework, the qualifying examination, and the doctoral dissertation – as well as processes needed to meet these requirements and recommendations for how to meet them.

Goal of the Epidemiology Doctoral Program

The goal of the doctoral program is to educate candidates to become independent, productive, and creative research scientists in the field of epidemiology.

Competencies

Upon completing the requirements for the PhD in epidemiology, graduates will be able to

- Formulate research hypotheses that can be evaluated through empirical epidemiological investigation;
- Critically evaluate the advantages and disadvantages of epidemiologic study designs applied to particular etiologic associations;
- Analyze and interpret epidemiologic studies using appropriate methods;
- Explain the theoretical underpinnings of epidemiology, including new and traditional study designs;
- Demonstrate understanding of the sources of bias and approaches to evaluating and controlling bias;
- Demonstrate proficiency in data collection, data analysis, and written summaries of statistical analyses;

Below we provide the PhD competency map with an explanation of the parts of the program in which each competency is addressed.

PhD Competency Map

Competencies for Academic Doctoral Degrees in Public Health (PhD Epidemiology)	
Competency	Describe how this competency is covered
1. Formulate research hypotheses that can be evaluated through empirical epidemiological investigation	Required Coursework: SPH EP854 Advanced Epidemiology SPH EP854 includes an overview of study designs and causal questions. The course covers the difference between causal and predictive hypotheses. Several sessions focus on formulating a research question that can be answered with data. Students learn how to develop a hypothesis, then turn that into a causal study question, and then map that question to data. Students learn to use the target trial framework to ensure that hypotheses correspond to real world interventions that can improve population health. The first exam assesses students' ability to formulate an appropriate epidemiologic hypothesis.
2. Critically evaluate the advantages and disadvantages of epidemiologic study designs applied to particular etiologic associations	Required Coursework: SPH EP855 Advanced Epidemiology Seminar SPH EP855 students are assigned readings that critically evaluate advantages and disadvantages of study design features for specific etiologic questions (e.g., health inequities, questions involving self-reported data, validity of exposure and outcome measurement, mediation, questions involving longitudinal changes in an outcome, and questions in the context of restricted populations). Students' proficiency is assessed through structured discussion on these papers that they lead, their creation of quiz questions on the material for their peers, and an original paper that they research and write on a topic that addresses a specific methodological challenge in conducting epidemiologic research. Students must be able to tie their chosen methodologic challenge to the critical evaluation of the advantages and disadvantages of epidemiologic study designs, as applied to particular etiologic associations.
3. Analyze and interpret epidemiologic studies using appropriate methods	Required Coursework: SPH EP854 Advanced Epidemiology; SPH EP855 Advanced Epidemiology Seminar; SPH EP860 Novel Analytical Methods for Epidemiology

	SPH EP854 covers analyses and interpretation of epidemiologic studies using appropriate methods on novel approaches to confounding. Students learn to use both traditional (stratification and regression-based) approaches to statistical adjustment as well as novel methods to control confounding (propensity scores, regression discontinuity, and G-methods for time dependent confounding). Students learn how to assess effect modification and mediation in data. Competency is assessed in homeworks, where students analyze a dataset to assess causation, effect modification, and interaction using counterfactual types. On quizzes students are also asked to analyze data for confounding and effect modification and to conduct and interpret analyses to adjust for misclassification. In SPH EP855, students advance their ability, from what they learned in EP854, to make critical decisions in analyzing and interpreting epidemiologic studies. Specifically, they learn about appropriate statistical contrasts in health inequities research (differences in exposure, differences in outcome, differences in effect) and how to interpret them. They gain a more in-depth understanding of the bias induced by non-differential misclassification, differential misclassification, and dependent misclassification on effect estimates. This understanding extends to misclassification of exposure, health outcomes, confounders, and mediators, along with what design and analysis methods do and do not work for mitigating this bias, and what interpretations of findings are and are not appropriate when these biases might be present. They also learn how differential misclassification can result from analyzing a continuously distributed exposure that has been broken into categories. Students also gain a more nuanced understanding of decisions related to adjusting for confounding, including adjusting (or not adjusting) for proxies for confounders and the consequences of adjusting for proxies, mediators, and colliders. Students learn to interpret the direction of bias in an effect estimate in the presence of confounding and differential selection. They also learn how measurement error in a continuously distributed outcome and collider bias combine to produce regression to the mean bias in analyses of outcome change. Competency is assessed in structured discussion that the students lead on seminal paper, quiz questions they generate for their peers, as well as an original paper they write on a topic that addresses a specific methodological challenge in
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	conducting epidemiologic research. Competency is also assessed on a comprehensive take-home final exam that includes subparts relevant to critical decisions in statistical analysis and the appropriate interpretation of findings. SPH EP860 teaches students advanced methods in epidemiologic data analysis, including an understanding of the strengths and limitations of each method. Understanding is evaluated in a final project in which students analyze a data set that they have access to, in order to ask a causal question using the methods practiced in class (e.g., marginal structural models, mediation analysis, instrumental variables, regression discontinuity, propensity score, etc.). They then write up and interpret their findings. The final project assesses the students' ability to analyze and interpret epidemiologic data using appropriate methods. Other Educational Experiences: The doctoral dissertation requires students to analyze data using appropriate methods and to interpret the results of these epidemiologic studies.
4. Explain the theoretical underpinnings of epidemiology, including new and traditional study designs	Required Coursework: SPH EP854 Advanced Epidemiology; SPH EP855 Advanced Epidemiology Seminar; SPH EP860 Novel Analytical Methods for Epidemiology SPH EP854 explains the theoretical underpinnings of epidemiology, including new and traditional study designs on causal models and DAGs. Students work through three causal models, including the sufficient causes model, the counterfactual model, and causal diagrams. Students then apply these to study designs including randomized trials and observational designs. Students also learn the validity of different control sampling strategies in case control studies. Problem sets address this competency by having students use an applied example from the counterfactual theory framework and evaluating proficiency of foundational and evolving theories within epidemiology. This competency is also addressed in exams where students are asked to apply causal models to determining causal estimands.

	SPH EP855 covers the theoretical underpinnings of epidemiology (e.g., theories that position epidemiology as a quantitative science of public health, theories of disease distribution in populations) and DAG theory. These theories drive study design considerations. The students lead structured discussion on seminal theoretical papers within epidemiology and generate quiz questions on the material for their peers, as well as write a paper on a topic that addresses a specific methodological challenge in conducting epidemiologic research. As appropriate, students are encouraged to explain how their challenge arises from or is otherwise related to theoretical underpinnings in population and/or epidemiology (e.g., DAGs). The final exam assesses their fluency in these theories and their ability to apply them to specific epidemiologic problems. SPH EP860 teaches students theoretical underpinnings of epidemiology in the context of new and traditional study designs and causal modelling methods. The final project has students use their own data to conduct a causal analysis. As part of their write-up, students discuss the theoretical underpinnings of the methods and the limitations of the approach. Other Educational Experiences: The doctoral qualifying exam requires students to explain the theoretical underpinnings of epidemiology in response to specific questions representing specific research scenarios. The doctoral dissertation requires students to employ new and/or traditional study designs in the execution of their research.
5. Demonstrate understanding of the sources of bias and approaches to evaluating and controlling bias	Required Coursework: SPH EP854 Advanced Epidemiology; SPH EP855 Advanced Epidemiology Seminar SPH EP854 students learn about and demonstrate an understanding of sources of bias and approaches to evaluating and controlling sources of systematic error. We define and work through applied examples of confounding using causal models and novel study designs to reduce confounding. Students learn about different types of selection bias using causal diagrams and identify strategies to reduce selection bias. They learn the impact of different types of measurement error and strategies to

	quantify the impact through quantitative bias analysis. Mastery is assessed with quizzes and a final exam that are focused on aspects of bias in epidemiologic research. Through these assessments, the students must demonstrate they can identify each source of bias, identify and implement strategies to reduce the bias, and show ways to quantify the impact of sources of residual systematic error. SPH EP855 includes a core goal of understanding and mitigating sources of bias in epidemiologic studies. Students learn approaches to evaluating the presence of and controlling for bias in the estimation of causal effects. These biases include those introduced by the psychology of researchers (e.g., heuristic thinking) as well as biases embedded in the design of a study (e.g., independent nondifferential misclassification of both exposure and outcome, dependent nondifferential misclassification, differential misclassification, measurement error in both exposure and outcome, confounding, selection bias, regression to the mean bias, immortal time bias, and other collider biases). The students learn the biases, in the abstract, as well as how to identify them in applied settings, and which mitigation strategies (learned in EP854), if any, should be used. Competency is assessed in the structured discussion students lead on assigned seminal papers, quiz material they develop for their peers, the paper they write on a topic that addresses a specific methodological challenge in conducting epidemiologic research, and applied questions on a final exam. Other Educational Experiences: The doctoral dissertation requires students to explore types of bias that may be present in their study results through formal evaluation and implement appropriate methods for controlling for bias where possible.
6. Demonstrate proficiency in data collection, data analysis, and written summaries of statistical analyses	Required Coursework: SPH EP860 Novel Analytical Methods for Epidemiology SPH EP860 introduces the students to an applied example of novel data analysis methods in SAS or R in each session of the course. The course covers propensity scores, instrumental variables, marginal structural models, quantitative bias analysis, and the G-formula. In each homework assignment, students demonstrate their ability to analyze epidemiologic data,

	recognize the potential biases entailed with specific data collection methods, and provide a written discussion of the analytic approach and the results. For the lessons on quantitative bias analysis, students are taught about the collection and use of validation data. In the final project, students implement one of the methods to control sources of bias using a data set that they have access to in order to answer a causal question. Students must demonstrate their mastery of data analysis using the novel methods presented. Students write up their results, describing the methods and their limitations. Students demonstrate their ability to analyze epidemiologic data and provide a written discussion of the analytic approach and the results. Other Educational Experiences: The doctoral dissertation requires students to conduct an independent analysis of data and provide a written summary of all statistical analyses performed. This does not necessarily require them to collect new data, but they must demonstrate proficient understanding of how the data that comprise their dataset were collected, and the ramifications of that collection on the accuracy of their estimates.
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As required by BUSPH, doctoral students must complete an annual report in which they assess their mastery of the doctoral program competencies. The intent is for this document to serve as one of many springboards for discussion with a student's primary research mentor about course selection, dissertation progress, and professional development.

Admission

In addition to meeting general admission requirements of BUSPH (bu.edu/sph/admissions), admission to the Epidemiology PhD program also requires a Master's degree in a related discipline (e.g., epidemiology, public health, statistics, social and behavioral health, health professions), and at least two graduate level epidemiology courses with at least one epidemiology course at the intermediate level or higher. Successful candidates have at least 1-2 years of work experience in a research setting within a related discipline.

At the time of admission, students are notified that they have a guarantee of four years of support during their time in the program, as long as they maintain good academic standing and full-time status in the program. This support will cover full tuition for all coursework required for the degree program, the continuing education fee following the completion of coursework, mandatory health and wellness fees, and basic individual health insurance. Students also receive 12-month stipend funding. It is our expectation that the program can be completed within four years. More information on student stipends and related expectations can be found in the Graduate Research Assistantship section below.

The Epidemiology Doctoral Committee

The Epidemiology Doctoral Committee (EDC) oversees the doctoral program in epidemiology and is comprised of primarily department faculty. The faculty members of the EDC, and the Director of the Epidemiology Doctoral Program ("Program Director"), who chairs the EDC, are appointed by the Chair of the Department of Epidemiology.

The EDC implements the program guidelines described herein. The EDC delegates authority to others for certain functions (such as the dissertation committee for supervising a student's doctoral dissertation) but retains the final authority in approving or disapproving a student's doctoral studies. The EDC is responsible for accepting students into the doctoral program, assessing student's progress throughout the program, administering the qualifying examination, approving members of the student's dissertation committee, approving student's letters of intent and dissertation proposals, approving the final dissertation, certifying that a student has completed the degree requirements, and if necessary, dismissing students from the doctoral program.

All EDC decisions concerning individual students are final. The decisions are reported to the department faculty and discussed as needed during monthly faculty meetings.

Mentoring and Advising

Each student entering the epidemiology doctoral program is assigned to a primary research mentor. The primary research mentor is typically the supervisor of the student's graduate research assistantship and the person whose scientific work is most aligned with the student's interests. It is expected that students meet with the primary research mentor regularly to discuss their progress in the program, in addition to any meetings that occur as part of a student's research assistantship work. Formally, and in addition to the annual report of student progress required by BUPSH, each student is expected to complete an individual development plan annually and review this with their primary research mentor to facilitate a discussion about program progress, goals, and needs. A link to an individual development plan template that can be used can be found [here](#).

At the request of the student, or upon recommendation of the assigned mentor or the EDC, a second advisor may be added. The Program Director can facilitate the introduction of the student to the second advisor. Students may request to change advisors or be notified by the Program Director of the need to change advisors, in the first 2 years of the program (prior to the student forming a dissertation committee) due to changes in faculty availability or match with a student. Should a student feel like they need to discuss a challenge they are experiencing with their mentor, they are encouraged to speak with the Program Director or Department Chair at any time.

The advisors appointed on entry to the program remain the student's advisors until a student forms a dissertation committee (typically during year 2 of the program). When the EDC approves the student's dissertation committee, the chair of the dissertation committee becomes the student's primary mentor for the rest of their time in the doctoral program.

A peer mentor who is a student in the third year of the doctoral program or beyond is assigned to each incoming student during the summer after acceptance. The Program Director will make every attempt to match incoming students with peer mentors who share similar research interests and will introduce the incoming student and their peer mentor via email. The nature of the relationship between an incoming student and their assigned peer mentor (e.g., frequency of meetings) is at the discretion of both parties. Students who have

concerns about their relationship with their peer mentor are encouraged to discuss these issues with the Program Director.

Graduate Research Assistantship

Funding sources vary across students, with the most common source being appointment as a Graduate Research Assistant for a faculty mentor whose research interests align with their own. Graduate Research Assistants engage in research activities for 20 hours per week, beginning in the first month of the doctoral program and are supported by a stipend. Stipend amounts are determined by BUSPH and not at the discretion of individual faculty members. The Graduate Research Assistantship should be viewed by faculty as a training opportunity for the student through completing work on one of their funded projects. The Graduate Research Assistantship should be viewed by the student as an important opportunity to learn outside of coursework via real world experience in epidemiologic research. Funding for this stipend is usually provided through grants received from the National Institute of Health (NIH). Thus, both the mentor and student have a professional responsibility to ensure that an average of 20 hours per week is completed in accordance with expectations outlined in NIH policies and notices of grant awards.

Stipend funding sources (and therefore primary research mentors) may change during a student's doctoral training. The initial offer of admission provides a guarantee of four years of stipend funding, but faculty mentors may change due to funding availability, faculty, or student experience. Every effort will be made to ensure changes align with the student's scientific interests, however it cannot be guaranteed.

Occasionally, sources of funding shift such that a doctoral student's stipend must come from central (departmental) funds rather than grant funds from a specific faculty member. When this is necessary, students and their mentors will be notified. On a specified date, students will be expected to begin working on specified departmental research and education activities (e.g., providing general statistical support for the department, assisting with implementation of educational initiatives) for the amount of GRA time that is compensated by the department (e.g., a student who is fully funded by the department will spend 20 hours a week working on department-related activities). Every effort will be made to ensure assigned projects align with the student's scientific interests and professional goals, however it cannot be guaranteed. During this time, mentors are expected to continue to pursue grant funds so that the student can return to a faculty-funded GRA position as soon as one is available.

In cases where there is a need to change GRA funding source (either to a different faculty member or to departmental funding), but the student would not like to pursue the options for continued funding offered by the Program Director, a student may seek out their own GRA funding from a faculty member.

Occasionally students need an additional year in the program beyond their fourth year to complete their dissertation work. It is possible that a student's primary mentor has available funding to extend support to a fifth year -students should talk with their primary mentor about this possibility. However, students who have missed program deadlines (e.g., delayed sitting for the qualifying examination, submitted their dissertation letter of intent or proposal after the required deadline) cannot be offered a fifth year of funding.

Applying for Pre-Doctoral Grant Awards

Students are encouraged to work with their primary mentor to evaluate whether to seek external funding, for example via NIH F31 or F99 pre-doctoral training awards, to support their training. Because such grants have implications for the faculty who has guaranteed

funding to the student, it is important to discuss the plan with your faculty mentor. All doctoral student grant submissions must also be discussed with the epidemiology department Grants Manager(s) prior to submission, with as much notice prior to the application due date as possible. Grant managers play a pivotal role in ensuring that grant applications are completed correctly and serve as a liaison between those submitting grants and the Boston University Office of Sponsored Programs, which handles all grant funding awarded to people at BUSPH. Thus, involvement of a Grants Manager in the process of apply for a grant as early as possible is crucial. Please contact the Program Director to discuss which departmental grants manager you should work with for your proposal.

General Overview of the Program Timeline

YEAR 1	YEAR 2	YEAR 3	YEAR 4
Coursework/Co-curricular activities	Coursework/Co-curricular activities	Submit dissertation proposal	GRA Work
GRA Work	GRA Work	Coursework/Co-curricular activities	Coursework/Co-curricular activities
Begin to develop dissertation ideas and letter of intent with mentor	Submit letter of intent to EDC	GRA Work	Dissertation
	Prepare for qualifying exam (offered during summer)	Dissertation work begins following proposal approval	Submission of dissertation to the defense
			Graduation!

Section

2

Education Requirements Coursework

Boston University requires that no doctoral student receive a grade below B in any course. The third such grade results in dismissal, however this decision may be contested through a formal appeal process. More information about this process can be found within the [BU Academic Conduct Code](#). Although this may vary across classes, in general if a student receives a grade below an A- in a course, it suggests they have not grasped the material at the level needed for doctoral work. Such a grade would merit special attention to reviewing and learning the content more deeply. Students are strongly encouraged to discuss such a grade with their faculty mentor and the course instructor to determine how to learn the material more comprehensively after the class is completed.

The following are requirements and recommendations for coursework and academic credit:

1. The student must earn a minimum of 32 credits at BUSPH with a grade of B or higher. None of the coursework credits may be for pass/fail courses. Completion of the requirements related to pathways to excellence in substantive research areas will require the students to take more than 32 credits to finish the program. It is expected that the majority of the coursework will be completed within the first two years of the program, but students also have the ability to take additional courses that are relevant to their dissertation work during the last two years of the program with approval from the Program Director.
2. At least 24 credits must be earned in courses offered by the BUSPH Epidemiology or Biostatistics departments. If any epidemiology or biostatistics course is retaken to bring the grade up to B or higher, the credits for the first enrollment will not count toward the required credits, however the grades of both remain on the student's transcript.
3. The following courses are required (20 credits):
 - Advanced Epidemiology (EP854)
 - Advanced Epidemiology Seminar: Issues in Study Design (EP855)
 - Novel Analytical Methods for Epidemiology (EP860)
 - Grant Writing for Doctoral Students I (PH885)
 - Grant Writing for Doctoral Students II (PH886)
 - Pedagogy and Curriculum Development (PH895)
 - Mentored Teaching Practicum (PH896)
4. It is recommended that the remaining credits of coursework from the Epidemiology and Biostatistics departments (12 credits) come from the following courses:
 - Guided Epidemiologic Study (EP816)
 - Quantitative Bias Analysis Methods for Epidemiologic Research (EP861)
 - Simulated Problems for Learning Epidemiology (SimPLE) (EP862)

- Intermediate Programming in SAS for Applied Linear Models (BS805)
- Applied Causal Inference in Health Research (BS807)
- Meta-analysis for Public Health & Medical Research (BS810)
- Basic Survival Analysis (BS818)
- Logistic Regression (BS819)
- Advanced Methods in Infectious Disease Epidemiology (BS825)
- Statistical Methods and Applications for Genomics (BS831)
- Bayesian Modeling for Biomedical Research and Public Health (BS849)
- Applied Statistics in Clinical Trials I (BS851)
- Biostatistical Methods for Observational Studies (BS852)
- Generalized Linear Models with Applications (BS853)
- Analysis of Correlated Data (BS857)

Students may substitute a different biostatistics class for one or more of the classes suggested on this list as long as it supports their research goals and is approved by the Program Director prior to enrollment in the course.

5. These courses should be complemented by completion of the “pathway to excellence” requirements for one of our departmental research clusters. Each student will select the cluster most closely aligned with their research area of interest (aging and chronic disease, epidemiologic methods, environmental determinants of health, infectious diseases, psychiatric epidemiology, reproductive, perinatal, and developmental epidemiology, and structural and social determinants of health) and complete the criteria required to document substantive expertise related to that cluster. Each cluster requires 2 courses within the specific substantive area, and at least 2 more courses from among a recommended list. A list of the suggested and optional courses by cluster is provided as an Appendix at the end of this document.
6. Consistent with the BUSPH non-degree student policy, students who completed up to eight credits from the courses listed in items 3 and 4 above as a BUSPH non-degree student may count the credits towards their doctoral degree.
7. A maximum of four credits can be applied from BUSPH from a master’s degree program (MPH or MS), as long as the credits were above the required number for that degree.
8. A maximum of four credits may be transferred from other institutions, including short courses and summer courses. Requests for permission to transfer credits must be made to the Program Director and the appropriate forms must be completed and submitted to the BUSPH registrar. Requests to transfer credits earned before entering the doctoral program must be made during the first semester. Requests to transfer credits earned while in the doctoral program must be made before taking the course. Transferred credits must be at the graduate level. Transferred credits must have been earned no more than five years before the date of the transfer request and must not have been used to fulfill the requirements for another degree. Credits may not be transferred for courses judged by the EDC to be equivalent to the courses listed in Item 3 above, to replace recommended courses in Item 4 above, or to be redundant with any other course work applied to the degree requirements. Although credits for courses taken at the Boston

University Charles River campus are considered transfer credits by BUSPH, they may count (with the Program Director's approval) toward the program credits without counting toward the maximum of 4 transfer credits. Students interested in transferring credits from other institutions should review the [BUSPH transfer credit policy](#).

9. A doctoral student may take up to four credits of directed study/research without special permission. If a student wishes to do another directed study or research after having completed four credits, the student must write a short (1-2 paragraphs) letter to the Program Director requesting permission to do so. The letter should describe what the student will do for his/her directed work, the faculty member who will supervise the student, and the number of credits requested. The EDC will review the request and decide whether or not the student will receive credit for it.
10. Doctoral students who have completed their coursework requirements and qualifying exam must complete a continuing study form and submit it to the registrar before the start of the next semester so that they can be registered as continuing study students.
11. Students are designated as "full-time" by BUSPH if they are either 1) taking a *minimum* of 8 credits per semester and working in a GRA role or 2) in the continuing study phase of the program and working in a GRA role. All students must always fit into one of these two categories. This is especially important for international students as falling below full-time status could have visa implications. If at any time a student realizes that they are going to be in a situation where they do not fall into either of these categories this should be discussed with the Program Director immediately.

Recommended Course Sequencing for Required Courses

YEAR 1	
Fall	Spring
Advanced Epidemiology	Issues in Study Design or Novel Methods (dependent on alternating year offering)
Epidemiology or Biostatistics elective	Epidemiology or Biostatistics elective
Pedagogy and Curriculum Development	Mentored Teaching Practicum
YEAR 2	
Fall	Spring
Epidemiology or Biostatistics elective	Issues in Study Design or Novel Methods (dependent on previous year's offering)
Epidemiology or Biostatistics elective	Epidemiology or Biostatistics elective
Grant Writing for Doctoral Students I	Grant Writing for Doctoral Students II

* Sequencing and addition of elective courses is only a recommendation and should be decided by the student in conjunction with their primary research mentor, based on the student's prior academic preparation and goals. We encourage students to review the full course catalog for BUSPH prior to registration each semester to determine if there are courses in our department or others that will support individual education goals.

Doctoral Seminars

Led by the Program Director, doctoral students are required to attend a bi-weekly seminar. Seminars may include student research-in-progress (RIP) presentations, invited speakers, professional development topics, journal clubs, and/or social activities.

Responsible Conduct of Research Training

Each doctoral student is required to complete the Boston University training program in the responsible conduct of research. This training program should be completed as early as possible, preferably during the first year of study. It is the student's responsibility to maintain a completion record. More information about the training can be found [here](#). Students should also complete CITI trainings prior to the start of the program including the "Human Subjects Protection Training" for Medical Campus Sociobehavioral Researchers (listed under the Boston University Medical Campus institutional affiliation), the "Research Security Training (Combined)" listed under the Boston University (Charles River Campus) institutional affiliation. More information about these trainings can be found [here](#).

Section

3

Qualifying Exam

Doctoral students are required to pass a qualifying examination before progressing to degree candidacy. The purpose of the doctoral qualifying examination is to test student's proficiency in the conceptual frameworks of epidemiology and the application of epidemiologic and biostatistical methods. One goal in fielding these exams is to encourage students to spend some time reviewing the overall curriculum, linking concepts between classes, and developing a deeper understanding of the classroom work so these skills can be applied in new settings encountered outside of a classroom context. Preparation is a key part of the exam.

Exam questions require the student to demonstrate proficiency in principles and methods that a person with a doctoral degree in epidemiology would be expected to have mastered. For example, the students may be asked to discuss the ramifications of different methodological choices. Biostatistics questions focus on the application of biostatistics for an epidemiologist. The content of the exam primarily covers material that is presented within the doctoral courses students take at BUSPH. The exam may also include optional material presented in BUSPH courses, the contents of required textbooks for BUSPH courses (e.g., *Modern Epidemiology*, 4th Edition), or use manuscripts from the research literature as context for presented questions (in which case all information from the manuscript that is relevant to answering the questions will be provided to the student).

Timing of the Qualifying Exam

Students are expected to take the qualifying exam during the summer following their second year in the program. The exact dates are selected by the Program Director with consideration of student needs and will be announced no less than 4 months prior to exam date. It is each student's responsibility to alert the Program Director of dates that may conflict with exam scheduling as early as possible. Once the date is set by the Program Director it cannot be changed. Students who wish to take the exam at a time other than the summer following their second year in the program must petition the Program Director for approval at least two months prior to the exam to allow time for the director to gather information and approve or turn down the petition. A decision will be returned to the student at least one month ahead of the examination. Note that delaying the examination will delay progress in the program and may make it challenging to complete the program within the four year funding guarantee.

Procedures

The qualifying examination is closed-note and closed-book. One double-sided sheet of notes generated by the student is permitted. Students may use a hand-held, unprogrammed calculator, scratch paper (provided), pen, and pencil. No other computing tool or memory aid will be allowed or provided.

The qualifying exam has four sets of questions. Students are given three hours to answer one of two provided question sets. Students must turn in their answers to one question set by the end of the three-hour period. At that time a one-hour break with lunch will be provided. Following the one-hour break, students will receive two new question sets and will again be given three hours to answer one of the two provided question sets. Students must turn in

their answers to one question set by the end of the three-hour period, at which point their exam will conclude.

At least two graders will grade the examination and the student's identity will be masked until the grades are final. Students receive notification of a pass/fail grade from the Program Director. A passing grade requires an average total score of 70 points from each grader over the two submitted answers, and that both individual question grades are above 60. The EDC may require remediation following the qualifying exam, regardless of the exam outcome (pass or fail) when it is deemed beneficial to the student. This could include offering an oral exam to give a student the opportunity to clarify a small number of answers on the written exam or working with a faculty member to review the material and complete assignments for a specific course or other things the committee deems appropriate.

Failing the Qualifying Exam

Students who fail the qualifying exam on their initial attempt will be offered the opportunity to retake the exam the following calendar year. Students may continue to work on their dissertation letter of intent and proposal while they await their second examination. Students may petition the EDC for special requests during their second examination (such as a specific location to take the exam or to bring specific personal items) by writing to the Program Director. Students may not take the qualifying examination a third time. Failing the examination twice results in dismissal from the program.

Section

4

Dissertation

The doctoral dissertation is a written report of the student's independent and original research in epidemiology. Dissertation research should not be so far advanced at the time of submission of the dissertation letter of intent that EDC input could not be incorporated into the design, analysis, or presentation of the research. If the work has already been substantially completed or progress is too far along for substantial revisions, it should not be proposed as a dissertation.

Students begin by briefly proposing their dissertation topic in a dissertation letter of intent (details below). Once approved, the letter of intent is followed by a more formal written proposal. Students are encouraged to read the approved letters of intent, proposals, and dissertations of their student colleagues prior to preparing their own materials (examples have been shared with approval and can be found on the program OneDrive). These letters, proposals, and dissertations provide a template for successful submissions. Copies of dissertations may be found in the main office of the Department of Epidemiology, the BU Library, or obtained from the student who completed the work. The program timelines for submission of letters and proposal is meant to allow students who want to submit pre-doctoral grants (e.g., F31s) to have the proper program approvals in place as they work on their grant proposal, while also allowing all students sufficient time to explore and develop dissertation ideas with their mentor. If a student has any concerns about the timelines for letter and proposal submission included herein, please contact the Program Director to discuss your needs and possible alternate arrangements.

The doctoral dissertation itself includes three manuscripts of publishable-quality research deemed by the dissertation committee to meet the threshold of quality for a PhD in epidemiology, plus an introduction and conclusion. It is recommended that the dissertation addresses a common theme; although not required, having a thread of commonality will aid in making the dissertation more efficient and easier to write and will position the student for a successful job search. The dissertation must comply with the formatting requirements specified by Boston University. The dissertation ordinarily comprises an introduction, at least three chapters presenting the original research conducted for the dissertation (i.e., manuscripts in longer form that allows for the description of all the work that was conducted; hereafter referred to as "study chapters"), a discussion or conclusion, bibliography, acknowledgements, and appendices as appropriate. The research presented in the study chapters must meet the current standards of publication quality in refereed journals such as American Journal of Epidemiology, American Journal of Public Health, Annals of Epidemiology, Epidemiology, International Journal of Epidemiology, Journal of the American Medical Association, and New England Journal of Medicine.

Students frequently wonder what types of epidemiologic study (e.g., descriptive study, causal study) would be appropriate for their dissertation. Students should propose the type of epidemiologic study that is best suited to answer their questions of interest and that will be the most beneficial to their overall training, particularly considering their goals post-doctorate. Similarly, occasionally a student may be interested in including a study in their dissertation that is outside of the scope of what may be considered typical epidemiologic research (e.g., a qualitative study). While the EDC will consider approving one out of three dissertation studies that fall into this category, approval of such a dissertation study may be

contingent upon: completion of coursework that will provide the student with needed additional expertise in this area; inclusion of additional mentors/committee members who are able to document that they will be willing to provide added mentorship in this area as needed; acknowledgment from the student that a guarantee of stipend funding is based upon the average time it takes to complete a dissertation comprised of only epidemiologic research and thus, other types of research may extend beyond this time period; and a plan for funding any additional work the study may include, and other requests at the discretion of the EDC. Students are encouraged to check with the Program Director early in the process of conceptualizing their dissertation if they are concerned about either of the scenarios above or any others related to what is generally acceptable for dissertations. Students are permitted to take additional courses that are relevant to their dissertation work during the continuing study phase of the program with permission from the Program Director.

It is understood that the dissertation study chapters will be longer, have more detailed discussion of methodological decisions and theoretical frameworks, and have more tables and figures than permitted in published papers. It is the final prerogative of the dissertation committee to determine whether research fulfills the standards for a PhD in epidemiology at BUSPH. Publishing the work does *not* automatically fulfill the standard for PhD level work. We therefore encourage students to elicit dissertation committee approval for a study chapter *before* preparing and submitting the corresponding paper for publication.

Dissertation Letter of Intent

Purpose and Timing

The purpose of the dissertation letter of intent is to briefly describe the student's dissertation plans and name the student's dissertation committee, so that EDC members can review it before the student invests effort in developing an entire proposal. It is recommended that students submit their letter of intent to the EDC by December of their second year. This timing (or an even earlier submission to the EDC) is *very strongly recommended* for students who are interested in submitting pre-doctoral grant applications, so that approval by the EDC can happen prior to further development of the grant proposal. It is required that students submit a letter of intent by the end of May in the student's second year in the program (final deadline for submission). Dissertation letters of intent must be reviewed and approved by the student's dissertation committee and submitted to the Program Director. The letter of intent may be submitted at any point in the calendar year.

Dissertation Committee Composition

The dissertation committee should consist of a minimum of three persons; at least one of the committee members must have a primary appointment in the Department of Epidemiology. An example of a typical committee would consist of a faculty member from the department serving as chair, a second member of the department's faculty or a biostatistician (recommended but not required for all students), and a person with substantive expertise related to the topic of the research. Other options are possible, but each dissertation committee must include at least one member who has a primary faculty appointment in the Epidemiology Department. For proposed committee members who are not in the department's primary, secondary, or adjunct faculty, a brief statement must be given to the EDC of their areas of expertise as they pertain to the dissertation research. It is expected that students meet with their full dissertation committee at least quarterly to review progress, and this expectation should be made clear to potential committee members before they agree to be a part of a dissertation committee.

Format and Content

The letter should be no longer than four pages (.5 or greater margins, single spaced with one line separating paragraphs, no less than 11 point font, and no non-standard acronyms). Failure to adhere to these requirements will result in the letter being returned for revision.

The letter should begin with an introductory paragraph that presents the dissertation topic and its importance. The introduction should be followed by three sections pertaining to each of the three study chapters. Each section should contain a research aim (which should clearly address the hypothesis), and brief descriptions of the data source, an estimate of the number of study participants and observations and analytic plan. The letter should address the feasibility of the dissertation and expected timeline for completion. The letter should conclude with the nomination of a dissertation committee. The chair becomes the student's primary mentor during the dissertation phase of the doctoral program. It is expected that students who are interested in submitting pre-doctoral grants (e.g., F31) can use the material in this letter as the basis for a grant Specific Aims page.

Students may use AI tools in the preparation of their dissertation letter of intent for tasks such as correcting grammar and cutting text. However, a student must disclose their use of AI with the reason for use at the time their materials are submitted to the EDC. In addition, the student must attest that their dissertation committee approved the use of AI tools for the stated purpose. The description and attestation can be included in the letter of intent submission email, but the student's dissertation committee should be copied.

Use of causal language. Within epidemiology, studies are often categorized as causal, predictive, or descriptive. While this framework is taught within our program and important for epidemiologists to understand, it is not used within all content subdisciplines where epidemiologists publish; expectations regarding terminology, and especially whether to use causal or associational language to describe research questions and results differ markedly and are changing in the field. Understanding the evolving range of views in epidemiology and applied disciplines is essential for professional epidemiologists. Within the letter of intent, it is required that each student include a statement about whether the *research questions* in their dissertation are causal, predictive, or descriptive in nature (or some combination of the three). Next, students should describe the assumptions inherent to answering this of research question given their data and study design, and whether they are likely to be able to meet those (e.g., "my dissertation questions are causal but given the lack of longitudinal data, even if I find an association, I will remain entirely unsure about the causal direction between my hypothesized exposure and outcome"). Finally, the student is expected to describe the terminology that is common to their content subdiscipline that will be used within their dissertation (e.g., "although my dissertation questions are causal, in psychiatric epidemiology referring to study questions as causal when the assumptions to support causal inference are extremely tenuous or implausible [i.e., the study design does not involve randomization] is currently unacceptable. Therefore, I will frame my research questions as related to "associations" throughout my dissertation, which will allow me to publish this work in my field."). If you are pursuing a research question that is actually descriptive or with a primarily predictive goal, please state that. It is expected that this section will be no longer than half a page within the letter.

EDC Review

Two EDC members review submitted letters. In the event that there are not two EDC members with expertise that is relevant to the dissertation topic, a primary department faculty member with relevant expertise will be asked to be the second reviewer. The reviewers have

10 business days to complete the reviews. Any discordance between the reviewers will be arbitrated by the rest of the EDC. Letter decisions are made by the Program Director based on the feedback from the reviewers and their own review of the proposal. No more than two weeks after submission of the dissertation letter of intent, the Program Director informs the student whether the letter was approved or disapproved. Comments, along with the names of the reviewers, will also be communicated to the student. Students may reach out to the reviewers or the Program Director for clarification or for additional information about the comments as needed. Following approval, the student must begin to work with dissertation chair to develop the dissertation proposal.

Disapproval of the dissertation letter of intent will be accompanied by specific recommendations for improving the proposed research. While it is not common for an entire letter of intent to be disapproved, the amount of feedback students are given may vary, and it is possible that in some cases student will be asked to consider extensive revisions prior to writing their proposal.

After notice that a letter was not approved, students must submit a revised letter that addresses the reasons for disapproval by a deadline that is specified by the Program Director and determined by the extent of the revisions. Students may submit an additional page (.5 margins, single spaced with one line separating paragraphs, and no less than 11 point font) of text with the revised letter that outlines the changes to the letter that were made in response to the comments that resulted in disapproval, and to the extent necessary, explains their reasoning for the changes. Review of revised letters and notification of decisions will follow the procedure for original submissions as outlined above. In the rare case that a student's second letter is disapproved, submission, review, and notification procedures for a third letter would follow those outlined above. It is not expected that a student who is addressing prior comments, or thoroughly explaining why prior comments cannot be addressed, would have a third letter disapproved, however, should it happen, a meeting of the Chair of the Department of Epidemiology, the Program Director and the proposed committee member who has a primary appointment in the Department of Epidemiology will be convened to determine how to proceed in a way that best supports the student's completion of this requirement.

Dissertation Proposal

Purpose and Timing

The purpose of the dissertation proposal is to describe the student's dissertation plans in detail. It is *recommended* that students submit their dissertation proposal to the EDC by the end of May in their second year. This timing (or an even earlier submission to the EDC) is *very strongly recommended* for students who are interested in submitting pre-doctoral grant applications, so that approval by the EDC can happen in coordination with grant submission. It is *required* that students submit their dissertation proposal by the end of September in their third year in the program (final deadline for submission). Dissertation proposals may be submitted on any day of the month (between September 1 and June 1; EDC meetings are not held in July or August) and will be reviewed at the next monthly EDC meeting. Should extenuating circumstances necessitate a change to an EDC meeting date that will delay the student's proposal review, the student will be notified of the new review date as soon as possible.

Format and Content

The proposal must include a cover page that names the full dissertation committee and an attestation from the student that the full committee has reviewed and approved the submitted proposal (e.g., "I attest that my full dissertation committee has reviewed and approved this proposal.").

It is impossible to establish guidelines that anticipate the content of every dissertation proposal. In general, the proposal should be logically organized to present the proposed dissertation research. The proposal should very clearly lay out the scientific gap to be addressed in the research and the public health importance of that gap; the pros and cons of the proposed data, design, and analytic approach; and alternatives that were considered but not pursued. If the proposal addresses a common disease to be studied by three different designs in different populations, then that disease should be discussed in an introductory background section and background on the population and design should be described in the sections devoted to each study. If the proposal addresses three different hypotheses to be examined in a common population, then that population should be addressed in a common introductory section and then the hypotheses described in the sections devoted to each study.

In short, the organization should allow complete presentation while avoiding repetition. The dissertation proposal should be no more than 6000 words long (with no specific page limit), inclusive of all material in the body of the proposal (e.g., tables), but not including the title page, abstract, or bibliography. Brevity in scientific writing is an important career skill that is worth practicing. Therefore, any proposal that is over 6000 words long will be returned to the student with a request to adhere to the word limit. Students should use one-inch margins and no less than 11 point font and avoid the use of non-standard acronyms. Failure to adhere to these requirements will result in the proposal being returned for revision. The EDC recommends that the proposal address four main topics:

- Abstract
- Specific aims and hypotheses of the dissertation
- Background literature review, scientific gap to be addressed, and rationale or public health importance of this problem
- Data source, study design and analytic methods, including strengths and limitations of each of these and alternatives considered but not pursued.

The goals and recommended page allocation for each section (in parentheses) are presented below. Recommended page allocations are given as a guide to the emphasis that should be placed on each section relative to the others.

1. Abstract (one paragraph): Summarize the overall aim of the dissertation, the hypotheses that will be evaluated, the samples, study designs, and statistical analyses that will be used to evaluate these hypotheses.
2. Specific aims and hypotheses of the dissertation (one page): The specific aims should concisely state the methods that will be used to evaluate the hypotheses. It should be very clear to the reader that by accomplishing the specific aim, the dissertation will provide evidence that addresses the hypotheses. The hypotheses should guide the review of the literature, selection of variables, analyses, and interpretation of results. The hypotheses should state the exposure-disease associations that will be evaluated in each study. For research questions that are not hypothesis-driven (e.g., exploratory machine learning work, papers exploring bias or measurement), the importance of the problem to

be addressed and a clear explication of how the proposed work will address the problem is expected to be presented with the specific aims, but no hypotheses are required.

3. Background literature review and rationale (four pages): The literature review should do several things. It should present the epidemiologic rationale for the study, the mechanism(s) that underlie the exposure-disease relationship, and a critical review of epidemiologic and other studies that set the stage for the dissertation. This review should clearly lay out the scientific gap – what is not known or understood, or the key weakness in prior work in this area – to be addressed by the dissertation and how the proposed work will address that gap. At the end of the literature review, the reader should understand why the hypotheses are important, and how they will advance knowledge about your topic. Sub-headings for sections of your literature review are helpful.
4. Study design and methods (four pages for each study chapter): For each study chapter, repeat the aim and hypothesis, then briefly describe a) the dataset and sample that will be used, b) the study design (and rationale, if necessary), c) how the independent and dependent variables, potential confounders, and other key variables will be measured, d) plans for analyses, and e) either a power calculation or a precision calculation (A precision calculation is recommended. See: *Rothman KJ, Greenland S. Planning Study Size Based on Precision Rather Than Power. Epidemiology. 2018 Sep;29(5):599-603* for more information). Address the validity and quality of the data, and how these are assessed. When presenting plans for analyses, address how the analyses will evaluate the hypotheses proposed for that study. Generally, avoid proposing analyses that are unrelated to your hypotheses, but if such analyses are planned, explain why. Importantly, the analytic plan should always include descriptive analyses, crude analyses, and analyses that are stratified across levels of potentially important third variables as an initial examination of the data. Modelling should only be conducted after completing these three steps. The student also must confirm that the primary study from which the data arises has IRB approval. The student must be included as study personnel on the primary IRB protocol or they must receive approval for a stand-alone protocol covering their proposed work. End this section with the limitations of the proposed study methods and how this proposed study advances upon prior research in this area.

It is expected that students who are interested in submitting pre-doctoral grants (e.g., F31) can use the material in this proposal as the basis for their grant proposal.

Students may use AI tools in the preparation of their dissertation proposal for tasks such as correcting grammar and cutting text. However, a student must disclose their use of AI with the reason for use at the time their materials are submitted to the EDC. In addition, the student must attest that their dissertation committee approved the use of AI tools for the stated purpose. The description and attestation can be included in the proposal submission email, but the student's dissertation committee should be cc'ed.

EDC Review

Submitted proposals are reviewed by the full EDC, with two members selected as primary reviewers who present the proposal and discuss their comments with the EDC at the next scheduled meeting. A reviewer who is external to the EDC (e.g., other departmental faculty) will be contacted to serve as a second reviewer when EDC members do not have relevant experience to evaluate the proposal. After presentation of a student's proposal, the full EDC discusses the comments and EDC members are free to add additional comments. The Program Director will provide the student and their committee members with a written

summary of the review and whether the proposal is approved or disapproved within two weeks of the EDC meeting at which the proposal is discussed. If the dissertation proposal has been approved, the student should begin work on the dissertation under the supervision of the dissertation committee.

Although uncommon, disapproval of the proposal is accompanied by specific recommendations for improving the proposed research. After notice that a proposal was not approved, students must submit a revised proposal that addresses the reasons for disapproval within six months of notification of the disapproval. The proposal may be submitted at any point in the academic year (September through June). Students may submit an additional 1 page (one inch margins, single spaced with one line separating paragraphs, and no less than 11 point font) of text with the revised proposal that outlines the changes that were made in response to the comments that resulted in disapproval, and to the extent necessary, explains their reasoning for the changes. Review of revised proposals and notification of decisions will follow the procedure for original submissions as outlined above.

In the rare case that a student's second proposal is disapproved, submission, review, and notification procedures for a third proposal would follow those outlined above. It is not expected that a student who is addressing prior comments, or thoroughly explaining why prior comments cannot be addressed, would have a third proposal disapproved, however, should it happen, a meeting of the Chair of the Department of Epidemiology, the Program Director and the proposed committee member who has a primary appointment in the Department of Epidemiology will be convened to determine how to proceed in a way that best supports the student's completion of this requirement.

Presentation Requirement

All doctoral students who have passed the qualifying examination are required to make a short oral presentation on the scientific work and progress of their dissertation at an annual Epidemiology Doctoral Student Presentation Day. The purpose of this event is for doctoral students to have an opportunity to practice presenting their dissertation work in a supportive environment, followed by discussion with departmental faculty and their fellow students that may provide suggestions for how to augment or address issues a student is struggling with within their dissertation work. Students who cannot attend the presentation day must submit a short written summary that describes their dissertation work and progress in the past year. Students who are defending their dissertation within the semester that Presentation Day is held are excused from this presentation.

Change of Dissertation or Committee Members

If, at the time of proposal submission, one or more of the student's three proposed studies has changed substantially from what is described in the letter of intent that is approved by the EDC, or the dissertation committee membership has changed, a cover letter must accompany the proposal to describe the change and why it was necessary. If a dissertation study needs to be changed from what was described in the dissertation proposal that approved by the EDC, the student must submit that study to the EDC for approval using the dissertation proposal format. A study is considered substantially different if it addresses a different research question or employs a different dataset from that described in the dissertation proposal. A request for this change may be submitted at any point in the academic year (September through June) and will be discussed at the next monthly EDC meeting that is more than two weeks from the submission date. This proposed change must be accompanied by a letter from the dissertation chair that approves the proposed change on behalf of the dissertation committee. A student may propose a change in dissertation

committee membership by the same process, except no letter of approval is required from the chair of the committee if it is the chair whose membership is changing. The EDC will review the proposed change and may approve or disapprove it. The decision will be sent to the student with a copy to the chair of the dissertation committee within two weeks of the review by the EDC. If the proposed change is not approved, the letter will contain an explanation and suggest revisions that may be approved. Processes for resubmission and review following disapproval of a proposal change will follow those described for disapproved proposals above.

Dissertation Preparation

Similarly to dissertation proposals, it is impossible to establish guidelines that anticipate the content of every dissertation. In general, the dissertation should be logically organized to present the research findings. If the dissertation addresses a common disease to be studied by three different designs in different populations, then that disease should be discussed in an introductory background chapter and background on the population and design should be reviewed in the chapters devoted to each study. If the dissertation addresses three different hypotheses to be examined in a common population, then that population should be addressed in a common introductory chapter and then the hypotheses reviewed in the chapters devoted to each study. In short, the organization should allow complete presentation while avoiding repetition.

While the general criteria for dissertations are that they consist of three manuscripts of publishable quality research, it is expected that the written description of the student's dissertation work in the study chapters will include descriptions of work that was conducted during the dissertation but may not be included in a typical published paper. For example, if a sensitivity analysis is conducted to examine potential misclassification, it is expected that a student will include a full summary of this analysis, even if the results showed that the misclassification examined would only have a negligible impact on their observed associations. It is almost always the case that students have to reduce the length of the manuscripts presented in their written dissertation so that they meet journal requirements for publication. We recommend that you elicit committee approval for the dissertation paper before beginning to edit it down for a journal submission.

The dissertation must be prepared in accordance with the Boston University requirements (bu.edu/library/guide/theses/). The EDC strongly recommends that students begin preparation of their dissertation by writing a detailed outline and reviewing it with all members of their committee. However, the ultimate process by which dissertations are written and reviewed by the student's committee is at the discretion of the student and their committee members. Use of AI tools in dissertations is at the discretion of the student's dissertation committee. Students are encouraged to meet with the Program Director if they believe their committee's review process is negatively impacting their progress toward completion of the dissertation. The final dissertation should be accompanied by signatures from each committee member, which are obtained (via [DocuSign](#)) following a successful defense. It is important to review the formatting of the dissertation approval page with Brendan McDermott, Thesis & Dissertation Coordinator, BU Mugar Memorial Library, Room 306 (brendan@bu.edu) before it is signed by the dissertation committee members.

If the student works with someone who is not on the dissertation committee, the committee members must be informed and the individual's contribution must be acknowledged in the dissertation.

Dissertation Defense

The dissertation defense is an oral presentation of the dissertation work, to which all interested persons are invited. The defense date can be scheduled once the student, in conjunction with their committee members, feels reasonably certain that the work is at a point where scheduling the defense is appropriate. At a minimum, the student and the dissertation committee must attend the defense. If a member of the committee is unable to attend in person, alternative arrangements for remote attendance must be made. Students must check with the Academic Program Administrator to ensure there are no departmental or school-wide conflicts with the proposed defense time no later than 30 days prior to the defense. If there are not, the Academic Program Administrator will schedule a room for the defense and send a calendar invitation to the department. When scheduling their dissertation defense date, 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 BU Mugar Memorial Library. The final draft of the dissertation, which has been approved by the dissertation committee and formatted per the Boston University requirements, must be submitted by the chair of the dissertation committee to the Program Director at least one week prior to the defense. Upon receipt of the approved dissertation, the Program Director will inform the department faculty that the dissertation is available for review and comment. At this time, each student will be entitled to up to \$150 from the department to cover expenses as they complete the program. Students will be eligible to submit receipts for reimbursement from these funds to the Academic Program Administrator until graduation. Students are required to confirm University deadlines for dissertation submissions and plan accordingly.

The defense begins with an introduction of the student and committee by the chair of the dissertation committee. The student presents the dissertation for approximately one hour. All questions are reserved until after the presentation. The student then receives questions in this order: committee members, department faculty, and other persons in attendance. After the defense, the dissertation committee votes to approve or disapprove the dissertation. If changes to the dissertation are requested, the student will work with their primary mentor to determine a feasible timeline for completing changes while still meeting all BUSPH and University deadlines for graduation.

In the rare event that a dissertation is disapproved following a defense, a meeting will be convened at the soonest possible time between the Chair of the Department of Epidemiology, the Program Director, the student's committee, and the student to create a plan for supporting the student through a revision that all parties agree will allow for the approval of the dissertation.

Dissertation Submission to BU Mugar Memorial Library

The library has produced [a guide](#) to describe the process of submitting your dissertation to the library, including a dissertation template. It is recommended that students carefully review this guide early on in their dissertation preparation.

Publication Requirement

It is the expectation of the EDC that students publish the results from their dissertation research. Students should have submitted at least one study from their dissertation for publication by the time of their defense. Most dissertations utilize data that have been obtained from a grant-funded epidemiologic study. These data represent significant time and effort by the Principal Investigators, research staff, and participants engaged in the

conduct of the study. Principal Investigators have an obligation and responsibility to study participants, their colleagues and research teams, the NIH and other funders to ensure that work is being completed as outlined in grant proposals. Moreover, epidemiologic researchers hold an ethical obligation to study participants to communicate the public health relevance and implications of their work that is based on data voluntarily contributed by these individuals. When students lead manuscripts that are a part of grant funded projects they are entrusted with this responsibility. As such, students are expected to attend to the process of publishing their dissertation papers in a timely fashion.

If one year following graduation a former student has failed to make sufficient progress toward the publication of their dissertation papers, the Principal Investigator of the study from which the dissertation data were obtained, or, if that person is not a department member, the senior mentor on the dissertation, has the option to take charge of publishing the papers. Depending on the remaining work needed for the paper to be published, it is possible that this may also result in a change in authorship or author order. While the EDC would no longer be involved with the work at this stage of the process, we recommend that the former student and the Principal Investigator engage in clear and transparent discussions throughout this process, to ensure that all parties are aware of the decisions made and their consequences.

In addition to submitting at least one study from their dissertation for publication by the time of their defense, it is expected that all doctoral students will publish at least three papers during their time in the program.

Doctoral Student Graduation Calendar

As per BU, there are three times per year when students can be awarded a doctoral degree - May, August and January. Deadlines for required steps prior to each degree award date are important. Students must apply to graduate. The deadlines for registering for graduation, dissertation defense, and dissertation submission to Mugar Library change year to year.

Students must check the [SPH website](#) as early as possible to ensure they have adequate time to meet the required deadlines for graduation.

BU Doctoral Exit Survey

In an effort to improve the quality of graduate education at BU, the University asks PhD candidates to complete a brief survey. PhD candidates will receive an email from the BUSPH Registrar's Office with a link to the survey after they begin the dissertation submission process. Graduates are given the option to decline the survey (on page 2), but they must take action on the survey before the dissertation submission process can be completed. Responses are anonymous as is the decision to complete or decline to complete the survey.

Upon completion of the Boston University Doctoral Exit Survey, you will be redirected to the National Science Foundation's Survey of Earned Doctorates. The University asks that you take action on both the BU and the NSF surveys.

Questions about the BU Doctoral Exit Survey can be directed to [Nikki Longe](#) in the BUSPH registrar's office.

Section

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Doctoral Student Policies

In addition to the selected academic policies listed below, all students must adhere to all BUSPH academic policies, available at [bu.edu/sph/students/resources/policies/](https://www.bu.edu/sph/students/resources/policies/), and University policies that can be found here: <https://www.bu.edu/academics/policies/> and here: [bu.edu/lifebook](https://www.bu.edu/lifebook).

Compliance Requirements for All Boston University Students

All Boston University students must meet Boston University Compliance Requirements, outlined here: <http://www.bu.edu/reg/registration/requirements/>. Students may verify their compliance status on the My BU Student Portal. Students not in compliance are blocked from registration or updating their status in any way.

Registration Requirements

Up to date information about BUSPH registration requirements can be found here: <https://www.bu.edu/sph/students/advising-and-registration/courses-and-academic-resources/>

Vacation Time

Up to date information about the BU vacation time policy for doctoral students can be found here: <https://www.bu.edu/policies/vacation-time-policy-for-salaried-graduate-workers/>

Parental Leave

Up to date information on the BU policy on childbirth and adoption can be found here: <https://www.bu.edu/academics/policies/childbirth-and-adoption-accommodation/>

Leaves of Absence

Up to date information about leave of absence policies for doctoral students can be found here: <https://www.bu.edu/academics/sph/policies/withdrawal-leave-of-absence-and-reinstatement/>

Students must also inform the Program Director of their intention to take a leave of absence. It is expected that students, along with their Graduate Research Assistantship supervisor, will also inform departmental grant managers about their intention to take a leave of absence to determine any implications for funding (e.g., a leave needs to be approved by a funder).

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.

Academic Honesty

Up to date information about the BU Academic Conduct Code can be found here: <https://www.bu.edu/academics/policies/academic-conduct-code/>

Boston University Sponsored International Travel

Up to date information about requirements for sponsored international travel can be found here: <https://www.bu.edu/globalprograms/manage/international-travel/international-travel-registry/>

Grading Standards, Probation, and Dismissal

Grading Standards

Up to date information about the BUSPH grading policy can be found here: <https://www.bu.edu/academics/sph/policies/grades/>

Academic Warnings

Up to date information about academic warnings can be found here: <https://www.bu.edu/academics/sph/policies/academic-standing/>

Academic Probation

Up to date information about academic probation can be found here: <https://www.bu.edu/academics/sph/policies/academic-standing/>

In addition, a student also may be placed on probation if they have failed to make adequate progress in the program over a longer than average length of time. Reasons this may occur include, but are not limited to: not completing the qualifying exam by the 4th year of the program; not submitting a dissertation letter of intent by the end of year 2 in the program; not submitting a dissertation proposal within six months of receiving notice that their letter of intent has been approved; or, the student has not shown adequate dissertation progress. In addition, the EDC may assess a student's progress at any time and may place the student on probation if the EDC determines that the student has not made adequate progress toward meeting graduation requirements. If at any point the student believes they may be in danger of meeting one of the criteria for probation above they strongly encouraged to meet with the Program Director to alert them of the situation and for guidance.

Program Time Limits

It is a policy of Boston University that all requirements for a doctoral degree must be completed within seven years of entering the doctoral program. A student who does not meet the established time limits may be dismissed from the program without a degree. Leaves of absence do not extend program time limits.

Dismissal

Up to date information on academic dismissal can be found here: <https://www.bu.edu/academics/sph/policies/academic-standing/>

A student who is on probation for not making adequate progress may also be dismissed from the doctoral program if they do not demonstrate substantial progress during the specified probationary period or do not meet the requirement(s) of probation by the deadline specified by the EDC. A student who fails the qualifying examination twice will be dismissed.

International Students

International Students and Scholars Office (ISSO)

Up to date information about ISSO and policies specific to international student can be found here: <https://www.bu.edu/isso/>

Section

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Student Resources and Professional Development Disability Services

Students requiring disability services or accommodations are encouraged to meet with [Mary Murphy-Phillips](#), Assistant Dean of Students, who is the BUSPH liaison to the Boston University Office of Disability Services. Please refer to the BUSPH Student Resources ([bu.edu/sph/students/student-services/student-resources/](https://www.bu.edu/sph/students/student-services/student-resources/)) and to the Office of Disability Services website ([bu.edu/disability](https://www.bu.edu/disability)) for more information.

Student Health and Behavioral Medicine

BUSPH students have several options for health and medical care (<https://www.bu.edu/sph/students/student-services/health-resources/>). Students should always refer to their insurance brochure and policy for coverage options, benefits and any restrictions. Health insurance begins on August 15 in the year of admission and runs through August 14 of the following year, with renewal occurring for each subsequent enrollment year.

IN AN EMERGENCY YOU SHOULD ALWAYS GO TO THE CLOSEST HOSPITAL EMERGENCY ROOM.

Communications

There are several ways to stay in touch with faculty and other students and to be informed about events and opportunities at BUSPH.

The SPH website: [bu.edu/sph](https://www.bu.edu/sph).

The SPH Student Resources Website: <https://www.bu.edu/sph/students/student-services/student-resources/>

And emails you should automatically receive including **BUSPH Today** and **BUSPH This Week** and the approximately weekly messages from the Chair. While we realize that reviewing communications may be a lower priority at certain busier times, the EDC recommends that students do their best to stay apprised of and attend the various BUSPH and departmental events advertised in regular communications to build relationships with faculty and other doctoral students and to generally enrich their doctoral program experience. Students are welcome and encouraged to attend the monthly department meeting.

Conference attendance policy

Conference attendance is an important training activity for doctoral students, which provides opportunities for sharing work with broader audiences, learning from others in the field, and networking. In general, it is the perspective of the BUSPH Epidemiology Doctoral Program that students should be supported to attend conferences. This perspective is operationalized within the context of several key factors including availability of funding, equality among

students, and utility of repeated conference attendance/presentation of the same work. The purpose of this policy is to establish guidelines for funding for conference attendance for students in the BUSPH Epidemiologic Doctoral Program.

Source and amount of funding

Students in the BUSPH Epidemiologic Doctoral Program may receive funds up to \$1,000 of funding per calendar year to travel to a conference to present their research. In exceptional circumstances, students may receive additional support to attend a 2nd conference of particular relevance given their research and career stage. Funding may come from various sources, which should be explored in the following order:

Students should first inquire about funding for travel to their GRA advisor or other mentors on the research to be presented. GRA advisors may be able to support conference travel through grant awards or discretionary accounts when available, both of which are limited and subject to regulations which may limit certain charges (e.g., first or business class airfare, room service). When the source of support is faculty funds, it is expected that the student will be presenting shared work with the faculty member who provides the funding (typically their GRA advisor).

If a faculty member does not have funding to support conference travel for a doctoral student, the student should consider applying to the BUSPH on-campus student conference travel fund. More information can be found here: <https://www.bu.edu/sph/students/on-campus-students/academic-accommodations-and-support/student-conference-travel-fund/>

If the student does not receive travel funds from BUSPH or a mentor, students may apply for departmental travel funds as a last option. You will need your mentor's support for department-funded travel.

This departmental travel fund program is designed to provide funding to students to enhance their training and opportunities for scientific engagement, with an emphasis on faculty-mentored projects. Students may request travel awards for up to \$1,000 per calendar year for travel (and related costs such as conference registration). Students can apply for multiple awards but the total amount requested cannot sum to more than \$1,000 per calendar year. Applications will be reviewed on a case-by-case basis, with priority given to those with a clear professional development benefit to the student and no other available funding source. Because total annual funds for this program are limited, we strongly encourage applicants to be cost-conscious and use other sources when available.

PROGRAM GUIDELINES

- Students must be enrolled in the Epidemiology PhD program at BUSPH.
- Students *will* be asked to provide a brief written feedback about what they gained from the conference attendance. They *may* be asked to present about their experience at an Epi Department meeting.
- Funds should be used in accordance with [BU travel expense](#) policies.
- Funds can be used to cover 100% of student travel expenses or in conjunction with other available discretionary funds.
- A brief application with an estimate of the funding needed should be submitted prior to making any arrangements. Funding decisions will be offered within 2 weeks. If you

do not hear back from us within 2 weeks, please inquire promptly with Shelley Barnes sbbarnes@bu.edu or Susan Gomes at sgomes@bu.edu.

- Applications will be reviewed by the Department of Epidemiology Administration team. Priority will be given to opportunities with the largest apparent benefit to the student's professional development.
- It is allowable to submit an application for travel funds for a conference before your abstract is accepted if your decision about whether to apply is contingent on receiving departmental funding. Just be clear about this in your application.
- Funds will not be issued as a cash advance but will be reimbursed after the conference, providing itemized receipts.
- Airfare, conference or workshop registrations and hotel room and tax can also be booked through the department to avoid student financial burden.
- It is expected that students will use the funds to present new research that has never been presented at a previous professional meeting, and that they expect that research to culminate in publications.
- Grant funded research is not eligible for support unless the grant has less than \$1,000 available to fund the travel. If so, this mechanism can be used to make up the difference to \$1,000. If grant funding includes \$1,000 for travel we will not offer additional funds to cover a more expensive trip.
- All students are expected to submit an evaluation of how they used the money and gauge the travel value.
- Importantly, you can ask for **up to \$1000 per year in travel funds**. It is expected that students will request less than \$1000 when appropriate - this will help free up funds for as many students as possible to benefit from this program.
- The overall budget for this program is finite, and in any academic year the program will conclude for the year once the budget maximum is reached.
- Finally, departmental leadership will continue to evaluate this program on an ongoing basis. Please be aware that additional evaluation may yield program changes and additional new guidelines.
- An email will be sent to the students' primary mentor for approval so they are informed of your application prior to award notification.

PhD Student Travel Fund Application

These different sources of funding have different guidelines and expectations. It is the responsibility of the student to ensure that they adhere to expectations and guidelines based on the travel funding source.

Number of conferences/content of presentations

While conference attendance is generally an important experience for students, there are diminishing returns when many conferences are attended in one year or when the same research is repeatedly presented at separate conferences. In general, conference attendance should increase for students later in the program as students conduct more independent research and develop greater need to connect with outside mentors and identify future job opportunities. However, more than two conferences each year is unlikely to provide a meaningful amount of additional experience. Similarly, there are diminishing returns when presenting the same work at multiple conferences throughout the year or over two years. The goal of presenting at conferences is to share your work with the field and

receive feedback from other researchers in your research area to lead to a higher quality publication. Once work has been presented at one, maybe under unusual circumstances two conferences, it is very important to take the feedback you have received and move on to publishing a paper from that work and developing new work for future conference presentations. After at *most* two presentations of the same work, you are unlikely to receive new feedback on the work in a conference setting. Thus, determination about funding for conferences is likely to include an assessment of previous conference attendance and work presented.

Policy for Financial Donations to the Program

In the event that the PhD program in epidemiology receives a financial donation, use of the gift will be decided by the Program Director in conjunction with the wishes of the donor. Use of all donations must be discussed with the EDC and the Department Chair, but the Program Director has final discretion regarding the decision. Depending on the intention of the donor, use of donated funds may include supplementation of student stipends, additional travel funds for students, or other uses that benefit students experience in the program. Depending on the approved use of the funds, students may be required to submit an application to receive funds and students will be notified of this process on a donation-by-donation basis.

Professional Associations

In addition to skills gained through classes and other extracurricular events (e.g., departmental and BUSPH-wide talks) students benefit greatly from joining professional associations. These associations offer students opportunities to meet people working in public health, learn about job opportunities, understand trends in the field, and polish communication and presentation skills. Students are strongly encouraged to become active in at least one of the following organizations and are welcome to discuss their interest in other associations with the Program Director and their advisor. These organizations generally welcome student members at a reduced cost.

American Public Health Association (APHA) - apha.org

American College of Epidemiology (ACE) - acepidemiology.org

Interdisciplinary Association of Population Health Science (IAPHS) <https://iaphs.org/>

International Society for Environmental Epidemiology (ISEE) - iseeepi.org

International Society for Pharmacoepidemiology - pharmacoeppi.org/

Massachusetts Public Health Association (MPHA) - mphaweb.org

Society for Epidemiology Research (SER) - epiresearch.org

Society for Pediatric Epidemiology Research (SPER) - sper.org

Many of the faculty have long-standing affiliations with SER and consider it key to our ongoing professional development. The department sponsors student memberships for all of our PhD students.

Preparing for Life After the PhD

Approximately 18 months before you anticipate completing your dissertation, you should discuss with your mentors plans for career steps after the PhD. This would include discussing whether you aim to pursue an academic career, work in government, the for-profit sector, or in some other capacity. If you are unsure at 18 months, your mentor can work with you to

develop a plan to learn more about your options. Once you have a clear plan, your mentor can help you lay out a plan for pursuing that career path, e.g., informational interviews with prospective employers, applying for post-doctoral positions, or identifying funding sources to pursue your next steps.

Appendix. Suggested and optional courses for the completion for a content area pathway to excellence.

Note: Suggested courses are subject to change due to course availability and other considerations. Please refer to this guide routinely for updated information about suggested courses.

Aging and Chronic Disease Pathway to Excellence

Recommended courses for all students in this pathway (8 credits):

SPH EP 740 Introduction to Epidemiology of Aging

SSW WP 704 Social Policy and Programs on Aging

or

SSW HB 756 The Aging Experience: Theoretical Perspectives and Contemporary Issues

At least one class related to a physiologic basis of health and disease (or complex of diseases) that emerge more commonly in older adults, including but not limited to dementia, cardiovascular disease, cancer (e.g., GMS AN 702, Neurobiology of Learning and Memory; GMS AN707 Neurobiology of Aging).

Optional courses by topic area (select 8 credits):

Additional courses to consider for further substantive training:

SPH EH 707: Physiology for Public Health or

SPH MC 750 Disability Justice Through the Life Course

Additional courses to consider for further training in relevant biostatistical and methodological approaches relevant to research on older adults:

SPH PM 822: Advanced Quantitative Methods for Health and Social Policy Research

CAS PS 712: Statistics in Psychology II

WED RS 755 Psychometrics

SPH PM 828: Advanced Qualitative Methods

SPH BS 806: Statistical Learning with Applications in R

Continued on next page

Other recommended activities for excellence

ACTIVITY	EXAMPLES / FURTHER INFORMATION	FREQUENCY	RATIONALE
Review table of contents of leading journals for relevant publications	<i>J. Gerontology Series A and B</i> <i>The Gerontologist</i> <i>J Am Geriatric Society</i>	Quarterly	Awareness of current high priority topics/ findings
Serve as a co-peer-reviewer for two manuscripts	Coordinate with mentor	3 rd and 4 th year in the program	Learn professional norms in the field and discuss methods and critiques
Attend 1 seminar at the Center for Aging Research or watch Research on Tap on Biology of Aging	https://sites.bu.edu/bu-cares/seminar-series/ or https://www.bu.edu/research/2025/03/03/research-on-tap-aging/		Understand the types of questions asked in biological aging research
Lead 2 journal club sessions with faculty mentorship on a manuscript in an epidemiology journal + either a gerontology or geriatrics journal		Spring of 1 st year through 3 rd year	Practice presentations and critique contemporary papers, Understand disciplinary differences, become confident navigating relevant publications outside of epidemiology
Nominate and meet with a speaker for one of the department seminar series	Research leader in your intended dissertation focus area	2 nd or 3 rd year	
Attend conferences focused on aging	GSA AGS One clinically focused conference (e.g., Stroke, AHA, AAIC, Neurology)	2-4 th years	Go to each of these once to see the difference across fields. Repeat only if you find the meeting exciting and relevant.
Membership/conference attendance in professional organization	Society for Epidemiologic Research	Annual	Awareness of current high priority topics/ findings Networking and collaboration

Epidemiologic Methods Pathway to Excellence

Required courses for all students in this pathway (8 credits):

SPH EP 861: Quantitative Bias Analysis Methods for Epidemiologic Research

SPH EP 862: Simulated Problems for Learning Epidemiology (SimPLE)

SPH BS 807: Applied Causal Inference in Health Research

Optional courses (select 8 credits):

SPH EP 857: Design and Conduct of Cohort Studies

SPH EP 819: Advanced Social Epidemiology

SPH BS 810: Meta-Analysis for Public Health & Medical Research

SPH BS 822: Advanced Methods in Statistical Computing

SPH BS 849: Bayesian Modeling for Biomedical Research & Public Health

SPH BS 853: Generalized Linear Models with Applications

SPH BS 854: Bayesian Methods in Clinical Trials

SPH BS 857: Analysis of Correlated Data

SPH EH 851: Advanced GIS for Public Health and Climate Research

SPH EH 872: Environmental Data and Exposure Modeling

SPH PH 843: Quantitative Methods for Health and Social Policy Research

SPH PM 822: Advanced Quantitative Methods for Health and Social Policy Research

SPH PM 874: Causal Inference for Health Services Research

Other recommended activities for excellence

ACTIVITY	EXAMPLES / FURTHER INFORMATION	FREQUENCY	RATIONALE
Attend BUSPH's Health Data Science Distinguished Speaker Series	https://www.bu.edu/sph/research/centers-and-groups/population-health-data-science-program/	Monthly	Network with other researchers at BUSPH and elsewhere.
Participate in Doctoral Student Writing Community	https://www.bu.edu/sph/calendar/?eid=287360	Monthly	Engage in a supportive and structured approach toward writing research manuscripts.
Review table of contents of leading journals for relevant publications	<i>Epidemiology</i> <i>American Journal of Epidemiology</i> <i>European Journal of Epidemiology</i> <i>International Journal of Epidemiology</i>	Quarterly	Awareness of current high priority methods work

ACTIVITY	EXAMPLES / FURTHER INFORMATION	FREQUENCY	RATIONALE
Scientific meetings	Society for Epidemiologic Research Society for Causal Inference	1-2 meetings per year	Awareness of current high priority methods Networking and collaboration
Professional societies/ memberships	Society for Epidemiologic Research	Annually	Networking and collaboration

Environmental Determinants of Health Pathway to Excellence

Recommended courses for all students in this pathway (8 credits). Choose two:

1. Coursework in toxicology:
SPH EH 768: Toxicology for Environmental Health and Epidemiology
2. Coursework in methods of environmental health and assessment:
SPH EH 730: Methods in Environmental Health Sciences, *required for EH PhD students and is a prerequisite for several advanced courses*
3. Coursework in methods of environmental exposure modeling:
SPH EH 872: Environmental Data and Exposure Modeling, *if student has taken EH730 and other prerequisites*

Optional courses by topic area (select 8 credits):

Additional courses to consider for further training in epidemiologic and statistical methods of environmental epidemiology:

SPH EH 811: Intro GIS for Public Health
SPH EH 851: Advanced GIS for Public Health and Climate Research
SPH PH 803: Community-Based Participatory Research: Theory and Methods
CDS DS 541: Agent-Based Modeling of People, Health, and the Environment
SPH EH 757: Environmental Epidemiology. A note about coursework in environmental epidemiology: *This course, SPH EH 757, offers an introduction to the topic. Students who are new to environmental health may find it useful for its coverage of canonical studies in the field. An advanced version of this course, one more suitable for PhD students with previous experience in environmental health or environmental epidemiology, is under development.*

Additional courses to consider for further training in translation of environmental epidemiology:

SPH EH 805: Environmental Health Science, Policy and Law
SPH EH 866: Risk Assessment Methods

Additional courses to consider for further training in environmental science content:

Coursework in EH on specific environmental issues, as applicable to student's training needs (e.g., courses on climate change, water quality, urban geoscience, the environment and infectious disease, and evolving special topics courses)
Coursework in Earth and Environment (EE) on specific environmental issues, as applicable to student's training needs (e.g., EE 519 Energy, Society, & the Environment)

Additional courses to consider for further training in physiology, pathophysiology, toxicology, socio-political context of exposure, or fundamentals of other outcomes under study:

SPH EH 710: Physiological Mechanisms of Health and Disease, *if student has not had coursework in physiology and pathophysiology*

Coursework in Graduate Medical Sciences (GMS) on specific systems, as applicable to student's training needs (e.g., GMS AN 702: Neurobiology of Learning and Memory)

Coursework in Graduate School of Arts & Sciences (GRS) on topics, as applicable to student's training needs, in psychology, sociology, history, policy, biology

We encourage students to work with their mentors to identify other coursework that could enhance their training, as it pertains to environmental epidemiology generally and their dissertation research specifically. Course offerings evolve, as does content in special topics course, so it could be helpful to revisit the catalog periodically.

Other recommended activities for excellence

ACTIVITY	EXAMPLES / FURTHER INFORMATION	FREQUENCY	RATIONALE
Attend BUSPH's Environmental Health Seminar Series	https://www.bu.edu/sph/about/departments/environmental-health/ehseminars/	At least monthly	Network with other EH researchers at BUSPH and elsewhere.
Participate in Faculty & Staff Writing Community	https://www.bu.edu/sph/faculty-staff/faculty-staff-public-health-writing-resources/ Contact Dr. Jen Beard for zoom link. jenbeard@bu.edu	Monthly	Engage in a supportive and structured approach toward writing research manuscripts.
Review table of contents of leading journals for relevant publications	<i>Environmental Health Perspectives*</i> <i>Journal of Health and Pollution</i> <i>Environmental Epidemiology</i> <i>Journal of Exposure Science and Environmental Epidemiology</i> EE papers also occasionally appear in general clinical and biomedical journals, e.g., <i>JAMA</i> journals, <i>Science</i> , <i>Science Advances</i> *EHP is generally regarded as the premiere journal for research in environmental epidemiology.	Quarterly	Awareness of current high priority topics/ findings
Read past winners and runners up of the Best Environmental Epidemiology Paper (BEEP) Award	Awarded annually by the International Society for Environmental Epidemiology https://iseepi.org/beep.php	Annually	Awareness of high priority topics and findings, along with examples of well-constructed studies and well-written reports.

ACTIVITY	EXAMPLES / FURTHER INFORMATION	FREQUENCY	RATIONALE
Scientific meetings	International Society for Environmental Epidemiology (premiere EE meeting) Society for Epidemiologic Research Health Effects Institute (air pollution) International Society of Exposure Science Society of Toxicology American Geophysical Union	1-2 meetings per year	Awareness of current high priority topics/ findings Networking and collaboration
Professional societies/ memberships	International Society for Environmental Epidemiology Society for Epidemiologic Research	Annually	Networking and collaboration

Infectious Disease Pathway to Excellence

Recommended courses for all students in this pathway (8 credits):

SPH BS 728: Public Health Surveillance, a Methods Based Approach
 SPH EP 800: Microbes and Methods: Selected Topics in Outbreak Investigation
 SPH GH 805: Controversies in Global Control and Eradication of Infectious Diseases
 SPH BS 825: Advanced Methods in Infectious Disease Epidemiology

Optional courses (select 8 credits):

SPH BS 722: Design and Conduct of Clinical Trials
 SPH EP 730: Epidemiology of Vaccine Preventable Diseases
 SPH EP 755: Infectious Disease Epidemiology
 SPH BS 851: Applied Statistics in Clinical Trials I
 SPH BS 854: Bayesian Methods in Clinical Trials
 SPH BS 861: Applied Statistics in Clinical Trials II

Other recommended activities for excellence

ACTIVITY	EXAMPLES / FURTHER INFORMATION	FREQUENCY	RATIONALE
Attend BUSPH's seminars related to infectious diseases	Department of Global Health Seminar Quantitative ID seminar TBIG (TB-specific) seminar Topics in Infectious Diseases I: Epidemiologic Analysis Topics in Infectious Diseases II: Innovative Modeling of Disease transmission	Weekly or Monthly	Network with other researchers at BUSPH and elsewhere.
Participate in Doctoral Student ID-Epi group meeting		Monthly	Engage in a supportive and structured approach toward writing research manuscripts.
Review table of contents of	<i>Clinical Infectious Diseases</i>	Monthly	Awareness of current high priority

ACTIVITY	EXAMPLES / FURTHER INFORMATION	FREQUENCY	RATIONALE
leading journals for relevant publications	<i>Lancet Infectious Diseases</i> <i>Emerging Infectious Diseases</i>		infectious disease-related work
Scientific meetings	Union Conference for Lung Health (Global) Union Conference for Lung Health (North American) ID Week AIDS CROI	1 meeting per year	Awareness of current high priority research findings related to infectious diseases. Networking and collaboration
Professional societies/ memberships	Union membership	Annually	Networking and collaboration

Psychiatric Epidemiology Pathway to Excellence

Recommended courses for all students in this pathway (4 credits total):

SPH EP 790: Mental Health Epidemiology
 SPH EP 797: Concepts in the Measurement of Psychosocial Constructs

Optional courses (select 8 credits):

SPH SB 780: Mental Health and Public Health: A Social and Behavioral Sciences Perspective
 SPH SB 785: Alcohol, Tobacco and Other Drug Use: People, Populations and Policies
 SPH SB 730: Stress as a Public Health Problem
 SPH SB 832: Trauma, Trauma-Informed Care, Recovery & Resilience
 SPH EP 775: Social Epidemiology
 SPH EP TBD Advanced Social Epi Theory (Ncube)
 SPH EP TBD Advanced Social Epi Methods (Shiba)
 SPH MC 783: Substance Use Among Minoritized and Marginalized Populations
 SPH MC 800: Preventing Mental Health Concerns: A Life Course Perspective
[CAS PS 875: Advanced Psychopathology](#) (GRS course, instructor permission required)
[CAS PS 712: Statistics in Psychology 2](#) (GRS course, instructor permission required)

Other recommended activities for excellence

ACTIVITY	EXAMPLES / FURTHER INFORMATION	FREQUENCY	RATIONALE
Review table of contents and articles of interest in leading psychiatric epidemiology journals	<i>JAMA Psychiatry</i> <i>Lancet Psychiatry</i> <i>American Journal of Psychiatry</i> <i>World Psychiatry</i> <i>British Journal of Psychiatry</i>	Quarterly	Awareness of current high priority topics/ findings
Conference attendance for professional organizations with mental health or psychiatric epidemiology focus	Anxiety & Depression Association of America (ADAA) International Society for Traumatic Stress Studies: ISTSS EPA Section of Epidemiology & Social Psychiatry	Annual	Awareness of current high priority topics/ findings Networking and collaboration

	<u>World Psychiatric Association,</u> <u>Epidemiology Section</u>		
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Reproductive, Perinatal, and Developmental Epidemiology Pathway to Excellence

Recommended courses for all students in this pathway (8 credits):

SPH EP759: Reproductive Epidemiology

SPH EP859: Advanced Methods in Reproductive, Perinatal, and Pediatric Epidemiology

Optional courses by topic area (select 8 credits):

Additional courses to consider for further training in reproductive epidemiology:

SPH GH 766: Sexual and Reproductive Health Disaster Settings

SPH GH 881: Global Reproductive and Perinatal Health

Additional courses to consider for further training in perinatal epidemiology:

SPH MC 759: Perinatal and Child Health Epidemiology

SPH GH 881: Global Reproductive and Perinatal Health

Additional courses to consider for further training in developmental epidemiology:

SPH MC 725: Women, Children and Adolescents: Public Health

SPH MC 750: Disability Justice Through the Life Course: Programs, Policies, and Turning Advocacy to Action

SSW WP 707: Social Welfare Policy & Programs on Children

Other recommended activities for excellence

ACTIVITY	EXAMPLES / FURTHER INFORMATION	FREQUENCY	RATIONALE
Attend Research Cluster Seminar Series	https://www.bu.edu/sph/about/departments/epidemiology/research/research-areas/#Reproductive	Quarterly	Learn about innovative research and network with other researchers.
Review table of contents of leading journals for relevant publications	<i>Paediatric and Perinatal Epidemiology</i> <i>American Journal of Obstetrics and Gynecology</i> <i>Obstetrics and Gynecology</i>	Quarterly	Awareness of current high priority methods work

ACTIVITY	EXAMPLES / FURTHER INFORMATION	FREQUENCY	RATIONALE
	<i>Fertility and Sterility</i> <i>Human Reproduction</i> <i>JAMA Pediatrics</i>		
Scientific meetings	Society for Pediatric and Perinatal Epidemiologic Research (SPER)	1-2 meetings per year	Advanced methods workshops Networking and collaboration
Professional societies/ memberships	Society for Pediatric and Perinatal Epidemiologic Research (SPER)	Annually	Networking and collaboration

Structural and Social Determinants of Health Pathway to Excellence

Recommended courses for all students in this pathway (4 credits):

SPH EP 775 Social Epidemiology
SPH EP 819 Advanced Social Epi Methods (Shiba)

Optional courses by topic area (select 8 credits):

Additional courses to consider for further substantive training:

SPH SB 730: Stress as a Public Health Problem
SPH SB 753: Preventing Sexual and Intimate Partner Violence: A Public Health Perspective
SPH GH 770: Poverty, Health and Development
SPH EH 707: Physiology for Public Health
CAS BI 510: Institutional Racism in Health and Science

At least one class from sociology or economics:

- CAS SO 721: Seminar on Social Networks;
- CAS SO 716 Macro Organization Theory;
- CAS SO 818: Medical Sociology;
- CAS SO 742: Urban Inequality;
- CAS SO 770: Topics in Sociology (varying);
- CAS SO 838: Seminar on International Migration
- CAS EC 551: Economics of Labor Markets

Additional courses to consider for further training in relevant biostatistical and methodological approaches:

SPH PM 822: Advanced Quantitative Methods for Health and Social Policy Research
GRS PS 712: Statistics in Psychology II
WED RS 755: Psychometrics
SPH BS 806: Statistical Learning with Applications in R

Continued on the next page

Other recommended activities for excellence

ACTIVITY	EXAMPLES / FURTHER INFORMATION	FREQUENCY	RATIONALE
Review table of contents of leading journals for relevant publications	<i>Social Science & Medicine</i> <i>Social Science & Medicine-Population Health</i> <i>Journal of Epidemiology and Community Health</i> <i>Journal of Economic Perspectives</i> <i>Quarterly Journal of Economics</i> <i>Demography</i> <i>Social Psychiatry and Psychiatric Epidemiology</i> <i>American Journal of Epidemiology</i> <i>Epidemiology</i> <i>International Journal of Epidemiology</i> <i>American Journal of Public Health</i>	Quarterly	Awareness of current high priority topics/ findings
Serve as a co-peer-reviewer for two manuscripts	Coordinate with mentor	3 rd and 4 th year in the program	Learn professional norms in the field and discuss methods and critiques
Lead a journal club session with faculty mentorship on a manuscript in an epidemiology or health research journal		Spring of 1 st year through 2 nd year	Practice presentations and critique contemporary papers
Lead a journal club session with faculty mentorship on a manuscript in an economics, sociology, or demography journal		Spring of 2 nd year through 3 rd year	Understand disciplinary differences, become confident navigating relevant publications outside of epidemiology
Nominate and meet with a speaker for one of the	Research leader in your intended dissertation focus area	2 nd or 3 rd year	

department seminar series			
Membership/conference attendance in at least one professional organization with mental health or psychiatric epidemiology focus	Society for Epidemiologic Research Population Association of America Interdisciplinary Association for Population Health Sciences American Sociological Association	Annual	Awareness of current high priority topics/ findings Networking and collaboration Try the non-SER conferences once and return only if you find them useful.