



HARVARD
T.H. CHAN
SCHOOL OF PUBLIC HEALTH
Department of Biostatistics



GRADUATE STUDENT HANDBOOK

Doctoral Program in Biostatistics

2023-2024

Contents

| | | |
|----------|---|----------|
| 1 | INTRODUCTION | 1 |
| 2 | THE DOCTOR OF PHILOSOPHY PROGRAM | 2 |
| 2.1 | Admissions Procedures | 2 |
| 2.1.1 | Kenneth C. Griffin Graduate School of Arts and Sciences | 2 |
| 2.1.2 | Department of Biostatistics | 2 |
| 2.2 | Advising and Degree Program Approval | 3 |
| 2.2.1 | Academic Advisor | 3 |
| 2.2.2 | Dissertation Advisor | 3 |
| 2.2.3 | Oral / Dissertation Committee | 3 |
| 2.2.4 | Departmental Approval of Program | 3 |
| 2.3 | Degree Program Components | 4 |
| 2.3.1 | The Core Curriculum | 4 |
| 2.3.2 | Advanced Doctoral Coursework | 4 |
| 2.3.3 | The Cognate | 5 |
| 2.3.4 | Consulting | 5 |
| 2.3.5 | Independent Research During First Three Semesters | 6 |
| 2.3.6 | The Written Qualifying Examination | 7 |
| 2.3.7 | The Oral Examination | 7 |
| 2.3.8 | Doctoral Dissertation | 8 |
| 2.3.9 | Teaching Fellowships | 8 |
| 2.3.10 | Teaching/Research Credits | 9 |
| 2.4 | Additional Policies and Procedures | 9 |
| 2.4.1 | Residency | 9 |
| 2.4.2 | Funding | 9 |
| 2.4.3 | Vacation | 10 |
| 2.4.4 | Outside Employment | 10 |
| 2.4.5 | Summer Internships | 10 |
| 2.4.6 | Transfer of Coursework | 11 |
| 2.4.7 | WinterSession | 11 |
| 2.4.8 | Teaching Awards/Certificates | 11 |
| 2.4.9 | Departmental Colloquia, Award Seminars and Working Groups | 12 |
| 2.5 | Satisfactory Progress | 12 |
| 2.6 | Master of Arts | 12 |

| | |
|---|-----------|
| A ADMINISTRATIVE REQUIREMENTS FOR DOCTORAL PROGRAM | 13 |
| B DOCTORAL DEGREE FORMS | 16 |



1 INTRODUCTION

This handbook describes the academic programs for the Doctor of Philosophy (Ph.D.) offered by the Department of Biostatistics at Harvard University. The Department offers courses of study leading to the Doctor of Philosophy and Master of Science degrees. Both the Ph.D. and SM programs provide rigorous training in theory and practical experience in statistical and bioinformatics methods used in the biomedical sciences. The Department's programs are designed to prepare students for careers in the theory and practice of biostatistics and bioinformatics, especially as applied to the biomedical and health sciences. The programs include training in the application and development of methodology, consulting, teaching, and collaboration on a broad spectrum of health-related problems. All students work with faculty on ongoing projects in methodological research and scientific collaboration. About sixty faculty participate in these programs.

The sections of this handbook include information and Departmental regulations concerning entrance requirements, program descriptions, degree requirements, and other Departmental policies. The Ph.D. Program is overseen by the Kenneth C. Griffin Graduate School of Arts and Sciences (Griffin GSAS), whereas the SM degree is governed by the Harvard T. H. Chan School of Public Health. Policies and official requirements of the Kenneth C. Griffin Graduate School of Arts and Sciences are set forth in the *Graduate School of Arts and Sciences Policies* (<https://gsas.harvard.edu/policies>). Policies and official requirements of the Harvard T. H. Chan School of Public Health are set forth in the *Harvard T. H. Chan School of Public Health Student Handbook* (<https://www.hsph.harvard.edu/student-handbook/>). Each graduate student is responsible for general knowledge of, and adherence to, the policies and requirements of the degree program in which the student is enrolled. This includes the use of generative AI at Harvard. Until more formal policies are set in place, you should read the initial guidelines found here: <https://huit.harvard.edu/news/ai-guidelines>. Additional departmental information is available at <https://www.hsph.harvard.edu/biostatistics/>. Vitaly important for our community is that all members demonstrate respect for each other and our discipline. For all members of the community, respect is demonstrated by attending all scheduled classes or meetings, and arriving on time, fully prepared, and ready to participate.

This handbook was prepared by the Director of Graduate Studies for the Ph.D. program and approved by the Faculty of the Department of Biostatistics. The Director is responsible for reviewing the student's program of study, and has the authority to consider exceptions to the rules and regulations established by the Department. Recommendations of the Director are forwarded to the Chair of the Degree Program Committee for final approval. The Director and the Department Chairs welcome suggestions and comments.

Dr. Sebastien Haneuse, Director of Graduate Studies, Biostatistics Ph.D. Program (shaneuse@hsph.harvard.edu)

Dr. Rajarshi Mukherjee, Assistant Director of Graduate Studies, Biostatistics Ph.D. Program (rmukherj@hsph.harvard.edu)

Dr. Brent Coull, Associate Chair, Biostatistics (bcoull@hsph.harvard.edu)

Dr. John Quackenbush, Chair, Biostatistics (johnq@hsph.harvard.edu)

Jelena Follweiler, Senior Manager of Academic Services, Biostatistics (jtillots@hsph.harvard.edu)

David Cruikshank, Graduate Program Coordinator, Biostatistics (dcruikshank@hsph.harvard.edu)

Dr. Erin Lake, Director of Student Development, Biostatistics (eklake@hsph.harvard.edu)

2 THE DOCTOR OF PHILOSOPHY PROGRAM

The Ph.D. program in Biostatistics trains students in the areas of probabilistic and statistical theory, biostatistical and bioinformatics methods, statistical computation and algorithm development, the ability to collaborate and communicate effectively with scientists in related disciplines, and the ability to teach biostatistics and bioinformatics effectively to general or specialized audiences. The Ph.D. program includes training in the development of methodology, consulting, teaching, and collaboration on a broad spectrum of health-related problems.

All Ph.D. students work with faculty on ongoing projects in methodological research and scientific collaboration. Faculty and students conduct methodologic research in Bayesian inference, bioinformatics, causal inference, clinical trials, computational biology, data analysis, decision sciences, experimental design, health policy, multivariate and longitudinal studies, quantitative genomics, sequential methods, spatial statistics, statistical computing, statistical genetics, stochastic processes, and survival analysis, among other areas. Areas of application include big data, biology, cancer, clinical research, computational biology, the environment, epidemiology, genetics, health disparities, HIV/AIDS, infectious diseases, neurology, and psychiatry, among other areas. Collaborative activities include coordination of national and international clinical trials, participation in studies of potential environmental hazards, collaboration on novel genetic and genomic studies, design of health surveys, evaluation of health interventions and medical technologies, and consultation with federal, state, and local agencies.

The overall goal of the Ph.D. program in Biostatistics is to prepare individuals to become leaders in the field through the achievement of six competencies:

- #1 Discuss and apply a foundational knowledge base in probability, biostatistical theory, and computation to conduct collaborative and methodologic research.
- #2 Synthesize established and recently-developed knowledge in probability, biostatistical theory, computation methods, and in public health, clinical and biological sciences.
- #3 Teach statistical theory or methodology at multiple levels.
- #4 Design and develop grants or proposals towards obtaining funding/resources for future research activities.
- #5 Collaborate and communicate effectively with research scientists in related disciplines.
- #6 Develop, implement and disseminate novel biostatistical or bioinformatics methodology to address outstanding questions in public health, clinical and biological science.

2.1 Admissions Procedures

2.1.1 Kenneth C. Griffin Graduate School of Arts and Sciences

For information on general requirements for admission, see the Kenneth C. Griffin Graduate School of Arts and Sciences website (<https://gsas.harvard.edu/admissions>) or contact the Admissions Office by phone (617-496-6100).

2.1.2 Department of Biostatistics

All candidates for admission to the Ph.D. program should have successfully completed calculus through multivariable integration and one semester of linear algebra. Knowledge of a programming language is also required. Evidence that these requirements have been fulfilled should form part of the application. In addition, all applicants are strongly encouraged to have completed two semesters of calculus-based probability and statistics, two semesters of advanced calculus or real analysis, and a course in numerical analysis.

Students with interests in bioinformatics are also encouraged to have completed courses in biology, computational biology, and genetics. Practical knowledge of a statistical/computing package such as SAS, R, Stata, or Python is also desirable. Students with interests in bioinformatics should also have knowledge of a scripting language such as Python or Perl and some familiarity with relational databases. The Biostatistics Department holds a Summer Preparatory Program in August for admitted students, which is designed to review basic concepts of probability, statistics, advanced mathematics, and statistical computing prior to the first semester in the Ph.D. program.

2.2 Advising and Degree Program Approval

2.2.1 Academic Advisor

All entering students are assigned an academic advisor to help plan course loads and explain Departmental requirements. At the earliest possible date, the student and the academic advisor will develop a program of study. Should a student wish to change their academic advisor, they are encouraged to discuss this with the Director of Graduate Studies. In addition, the Department and Griffin GSAS/Harvard T. H. Chan SPH provide services for all students with clinically documented learning and/or physical disabilities.

2.2.2 Dissertation Advisor

During the first and second semesters, doctoral candidates are encouraged to explore the range of research activities that faculty in the Department engage in. This is not intended to be a formal activity but, rather, give candidates an opportunity to understand the breadth and depth of topics that they may seek to pursue. After the written qualifying examination has been successfully completed (see Section 2.3.6), and usually in the third or fourth semester of study (see timeline in Appendix A), the doctoral candidate will identify an area of research and a dissertation advisor from among the faculty in the Department. The dissertation advisor assumes the responsibilities of the academic advisor and directs the student's doctoral research. In some situations, students may choose to have co-advisors, but at least one of these must be a faculty member of the Biostatistics Department. Candidates should notify the Biostatistics Senior Manager of Academic Services once they have identified an advisor.

2.2.3 Oral / Dissertation Committee

By October 15 after identifying a dissertation advisor, the student, in consultation with the dissertation advisor, nominates a Dissertation Committee to oversee the student's progress. Students must submit an [Oral / Dissertation Committee Nomination Form](#), which requires approval by the Director of Graduate Studies. The Dissertation Committee ordinarily consists of the dissertation advisor, who serves as the chairperson, and at least two other faculty members. A student may have two co-chairs of the committee, both of whom serve as co-advisors. The chair (or at least one of the two co-chairs) and at least one other member of the committee must be faculty members of the Department of Biostatistics.

The student is responsible for arranging periodic meetings with the Dissertation Committee, and for submitting [Dissertation Progress Report forms](#) (Appendix B) at six month intervals (November 1 and May 1). Students must meet with their dissertation committee *at least* once every six months; students in their final year of the program are encouraged to meet every three to four months to support completion of their dissertation. Changes or additions to the Dissertation Committee may be made by submitting a separate form, with approval of the Director of Graduate Studies.

2.2.4 Departmental Approval of Program

The degree program plan must be submitted to the Department for approval, on the doctoral Degree Program form provided by the Department (Appendix B). This program must be approved by the student's faculty advisor (academic or dissertation, as appropriate) and the Director of Graduate Studies. This plan should be submitted by May 1 of the second year. At this time the student may not have completed all required courses; any subsequent changes to the degree program plan must be submitted to and approved by the Director of

Graduate Studies. Students can view their own progress towards completing program requirements by running the “advising report” available through the my.harvard website under the My Program tab.

2.3 Degree Program Components

This section outlines the specific components of the Ph.D. Program that are designed to train students towards achieving the six competencies outlined in Section 2. A detailed presentation of the Griffin GSAS regulations for doctoral students is found at <https://gsas.harvard.edu/policies>. All doctoral students and their advisors should make sure that Griffin GSAS and Departmental requirements are met according to schedule.

Throughout, full-time students must register for the equivalent of at least 16 credits each semester.

2.3.1 The Core Curriculum

At the outset, students engage in a *core curriculum* that serves as a common foundation for the remainder of the program and careers in biostatistics more generally. As outlined below, the core curriculum consists of coursework in probability, statistical theory, computation, public health, epidemiology and reproducible science. These collectively serve to help students achieve competency #1.

More specifically, students ordinarily take the following four biostatistics core courses as part of their first year (i.e., G1 year) course load:

- BIST 230 Probability Theory and Applications I
- BIST 231 Statistical Inference I
- BIST 232 Methods
- BIST 234 Introduction to Data Structures & Algorithms

These courses must be ordinaly graded and collectively constitute the basis for the written qualifying exams (see Section 2.3.6) as well as the foundation for further advanced doctoral coursework, dissertation research and beyond.

Depending on a student’s background and prior experience, a student may, in consultation with the Director of Graduate Studies and their academic advisor, petition to waive one or more of these courses. However, doing so does not waive the requirement of having to take the written qualifying exams (which must be taken and passed regardless). In select circumstances, if a student seeks to waive out of all four courses (e.g., they have already taken them as part of a Masters program at Harvard or elsewhere), then the student will be asked to take the written qualifying exam for the first time in the August prior to matriculation (see Section 2.3.6).

Finally, to complete the curriculum, the program and/or Harvard Chan requires that, typically in the G1 year, all students take:

- ID 100P Foundations for Public Health
- EPI 201 Introduction to Epidemiology: Methods I
- BST 270 Reproducible Data Science
- HPM 548 Responsible Conduct of Research

See Section 2.4.6 about the potential transfer of prior coursework.

2.3.2 Advanced Doctoral Coursework

To further extend their foundation beyond the material in the core curriculum, students must take the equivalent of five full semester courses (generally 20 credits) from the following list:

- BIST 235 Advanced Regression & Statistical Learning
- BIST 238 Advanced Topics in Clinical Trials
- BST 239 Health Survey Samples

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|------|-----|--|
| BIST | 240 | Probability Theory and Applications II |
| BIST | 241 | Statistical Inference II |
| BIST | 244 | Analysis of Failure Time Data |
| BIST | 245 | Analysis of Multivariate & Longitudinal Data |
| BIST | 249 | Bayesian Methods in Biostatistics |
| BIST | 258 | Causal Inference: Theory and Practice |
| BIST | 282 | Introduction to Computational Biology & Bioinformatics |
| EPI | 511 | Advanced Population & Medical Genetics |

Note, not all courses may be offered each year, although students have the entirety of the program to fulfill this component. In addition, note that some training grants may have specific (additional) course requirements. Finally, all such advanced doctoral core courses contributing to the degree program must be taken for an ordinal grade (cannot be taken as pass/fail; also see Section 2.5), and should be completed with a grade of B or better. Ordinarily, students will complete all course requirements a year prior to defending.

Beyond satisfying the minimum criteria of five full semester courses, students are encouraged to take other courses to aid in their short- and long-term training goals. Such decisions should be made in consultation with academic and/or dissertation advisors, and can take advantage of the wide range of offerings from the Department of Biostatistics, other departments at the Harvard Chan School and in the University, as well as MIT.

2.3.3 The Cognate

The Department requires students to explore in some depth a selected cognate field, a non-quantitative field outside of biostatistics or statistics. The purpose of the cognate is to provide students with training in taking on and assimilating knowledge in a non-quantitative field, a skill which is critical to successful future collaboration. In turn, the cognate is designed to help students achieve competencies #2 and #5.

Specific examples of cognate fields include the biology of AIDS or cancer; biophysics; environmental health; epidemiology (e.g., chronic disease epidemiology, environmental and occupational epidemiology, infectious disease epidemiology, molecular epidemiology, psychiatric epidemiology, psychosocial epidemiology); genetics; health policy and management; human development; molecular biology; society and health; or other non-quantitative fields. The cognate field should be complementary to the student's research interest in biostatistics; certain training grants may also have specific requirements for the cognate courses. The courses used to satisfy the cognate requirement should form a coherent set of courses related to the cognate field selected, and should be primarily (if not exclusively) substantive, rather than quantitative, in nature.

Students must complete 8-10 (e.g., the equivalent of two full semester courses) credits of ordinally graded courses in the cognate field. Provided that the inclusion of such courses contributes to the selection of a coherent cognate field, a maximum of one full semester course among RDS 280, RDS 282, RDS 285, EPI 202, EPI 203, EPI 204, EPI 288, EPI 289, or other semi-quantitative courses in epidemiology or related fields will be allowed to count towards the fulfillment of this requirement. Note that courses cannot typically be approved individually as part of the cognate, since the combination of courses within a certain theme or field needs to be evaluated.

The selection of courses for the cognate field must be approved by the Director of Graduate Studies, as well as the relevant Training Grant Director (when applicable). This should be submitted on this [form](#) as part of the degree program plan (Section 2.2.4). All cognate field courses contributing to the degree program must be completed with a grade of B or better.

2.3.4 Consulting

Towards achieving the competencies #1, #4 and #5, students must acquire experience in planning and conducting studies in biomedical science or public health. To this end:

1. Each doctoral student is required to be involved in a meaningful scientific collaboration involving interaction with a researcher in the health sciences (domain expert), broadly defined but not a statistician or computer scientist, during their time in the program.
2. The collaboration must lead to material that would warrant co-authorship in a publication in the health sciences.
3. If a student is not already involved in a collaboration, the doctoral advisor and thesis committee are the first point of contact to help the student to identify a suitable opportunity, connect the student with the collaborator, and mentor the student in the work. However, a designated faculty overseeing consulting activities will facilitate opportunities when the student or advisor needs help.
4. The department will hold regular lightning talk sessions and each student must present their collaborative work at one session during their time in the program. These sessions will be ordinarily held the first week of June and the first week of December each year. A student will not be able to schedule their defense without having completed this requirement. The presentation needs to be complete by the end of the 4th year in the program, and will be noted in the next [progress report](#).
5. The student will update the thesis advisor and thesis committee regularly on the progress of the collaborative work in thesis committee meetings, which will include mapping out a plan and timeline to present the work to the department, just as the student would for thesis work.

The intent of this experience is for it to be ‘hands-on’ and in collaboration with at least one faculty member. Nevertheless, students will be given access to a range of materials/resources, including slides, that they can use as-needed.

2.3.5 Independent Research During First Three Semesters

All Ph.D. students are required to start independent research activities early in the program. This requirement is designed to allow students the opportunity to explore research areas that might be of interest for a doctoral dissertation and gain experience in activities needed for their doctoral dissertation research. The research should consist of meaningful activities that could ultimately serve as a part of, or motivate, a doctoral dissertation project, including but not limited to a literature review of a relevant research topic, a comparative simulation study of the performance of existing statistical methods for a problem, application or extension of recently developed statistical methods to data on a complex question, or initial methodological work on a new problem.

Specifically, all Ph.D. students are required to conduct an independent research project starting in the second semester of the first year with a faculty mentor, worth one semester-long (4 credit) independent study course (BST 300). See Section 2.3.10 (2nd paragraph) for details on enrollment. Each student will then continue to conduct independent research in the summer after their first year. Students are expected to work on this project, along with qualifying exam preparation, full time for the equivalence of two months, from approximately June 1 - August 1 depending on when they choose to take vacation. Students may then suspend their research activities on August 1 and devote their time to qualifying exam preparation. Students have the opportunity, but are not required, to switch projects at the start of the summer. For those on the genomics training grant (which requires rotations), the Spring work can count as a rotation for their training program. In this case, instead of registering for BST 300, the student should register for 2.5 credits in BST 316 Quantitative Genomics Lab Rotation for the full Spring term. Note, students registering for BST 316 should not simultaneously register for BST 300.

Students resume their work on their independent research project during the Fall semester of their second year, enrolling in BST 300 with their most recent project advisor for 4 (5 Harvard Chan) credits. Students will present some aspect of their independent research in January of their second year during an independent research project symposium. For those on training grants, independent research projects should be approved by the training grant director. Students should submit their proposed 2nd semester research project ([form](#))

by January 15 of their first year, and an update of the work they plan to do during the summer by May 1 of their first year using the same [form](#).

2.3.6 The Written Qualifying Examination

The written qualifying examination is administered annually in the summer, ordinarily in mid-August, following the first spring semester. Students ordinarily take the exam for the first time in the summer before their G2 year. The exam consists of two components, administered in two sessions on different days, assessing material covered in the biostatistics doctoral courses in the core curriculum (see Section 2.3.1). The first component is an in-person, closed-book 3-hour exam, designed to assess knowledge in probability and theory (i.e., material covered in BIST 230 and 231). The second component is a 3-day take-home open-book exam, designed to assess knowledge in methods and computation (i.e. material covered in BIST 232 and 234).

The purpose of the exam is two-fold. First, it provides an opportunity for students to organize and synthesize the material covered by the four core courses; the ability to organize and synthesize a wide range of material is an important skill that the students will need as they embark on their dissertation research. Second, the exam tests the student's understanding of probability, statistical inference, and statistical and computational methods that collectively serve as the foundation for dissertations in biostatistics. With these in mind, the written qualifying exam serves to help students achieve competencies #1 and #2. Copies of past examinations are available on request from the Senior Manager of Academic Services.

The written qualifying examination is evaluated (separately) by the Qualifying Exam and Academic Standing Committees, who establish passing thresholds for the two exams. During this initial phase of the evaluation, the members of the two committees are blinded to the names of the students. In the event that one or both of a given student's scores fall below the passing thresholds, additional evaluation is based on their performance in coursework and independent research. On the basis of this further evaluation, a student whose qualifying exam score(s) falls below the passing threshold(s) may nonetheless be determined to pass the written qualifying exam.

In the event that a student does not pass one or both of the exam components, they will be given a second opportunity to retake the exam, ordinarily at the next time the exam is administered. Students will only be required to retake the exam components that they did not pass. During the interim academic year, the student will typically engage in coursework that will be designed, in consultation with the Academic Standing Committee, to balance maximizing the chances of passing at the second attempt, with continued progress in the program. In the event that a student has not passed both exams by the second attempt, they will be withdrawn from the program. At this point, the Department will work with the student to provide funding/support/insurance for one additional semester (i.e., the subsequent Fall semester), either as a temporary worker or as a full-time student (potentially towards completing the requirements for a Master of Arts degree; see Section 2.6).

2.3.7 The Oral Examination

The oral examination assesses the student's potential to perform research in a chosen field. Successful completion of the written qualifying examination is a prerequisite for taking the oral examination. The oral examination should be scheduled by March 31 in their sixth semester or October 15 in the seventh semester, after the passing of the written qualifying exam, whichever comes first. In preparation for the oral examination, the student must decide on a specialized topic on which he/she wishes to be examined. In most cases, this specialized topic will be related to the student's chosen dissertation research area.

Students should prepare an oral exam proposal in the format of an F-31 predoctoral individual training grant application, which includes a 1-page "Specific Aims" page, a 6-page research proposal section, and a 30-line abstract for the proposal written for a non-technical audience. The research proposal summarizes the literature and indicates the proposed specific aims for their dissertation (usually two or three aims); at the time of the oral exam it is expected that students will have completed substantial work for their

first dissertation paper, with some preliminary results, and have general ideas and possible directions for their second and third papers. Additional detail/instructions, as well as example F-31 proposals, will be made available as students begin preparing for the exam (or for an F-31 submission, whichever is sooner). Note, that the proposal in the form of an F-31 submission is specific towards helping students achieve competency #4.

This research proposal must be given to the Dissertation Committee (see Section 2.2.3) at least two weeks prior to the examination, and the oral scheduling form must also be submitted to the department at least 2 weeks in advance (see Appendix B). At the oral examination, students will be required to make a short presentation of their chosen topic, typically approximately 45 minutes long, and will then be examined on the topic by the Committee; students should allow for up to two hours for scheduling the exam. Note, the examination may include questions regarding the cognate area, as well as area of proposed research.

2.3.8 Doctoral Dissertation

The dissertation should be an original contribution to scientific knowledge, and directly contribute to competency #6. It can contribute to a subject matter field through making an original methodologic contribution or through the innovative application of existing methodology or a combination of the two. At a minimum dissertations consist of material sufficient for three publications, and are often written such that each chapter reflects a paper considered publishable in a high quality peer-reviewed journal.

Acceptance of the dissertation is the responsibility of the student's Dissertation Committee, the Department, and Griffin GSAS. When the dissertation is complete, the student defends it to the Dissertation Committee at a public presentation. The defense must be openly publicized and scheduled at least three weeks in advance. A [Dissertation Defense Scheduling Form](#) must also be submitted three weeks in advance (see Appendix B). Copies of the dissertation must be given to the members of the Dissertation Committee and the Department Chair *at least* two weeks before the defense.

The defense should be scheduled as a two-hour block consisting of a 45 to 60 minute long presentation followed by a question-and-answer period. The defense presentation should cover the main material presented in the dissertation. The question-and-answer period will first include questions from the Dissertation Committee, then from other faculty members in the Biostatistics department, and finally from the general audience. Following the presentation and question-and-answer period, the committee will privately discuss whether the candidate has sufficiently completed the requirements for a doctorate. If the candidate has passed, the Dissertation Committee will sign the Dissertation Acceptance Certificate which the candidate must include when submitting their dissertation to Griffin GSAS.

Note that Griffin GSAS has specific requirements on formatting, submission, publishing, and distributing the Ph.D. dissertation, which can be found at <https://gsas.harvard.edu/degree-requirements/dissertations> in the Griffin GSAS Policies. Students submit their dissertations electronically through Harvard's electronic thesis and dissertation submission system. Timelines and submission deadlines are noted in the degree calendar section of the Griffin GSAS Student Policies.

2.3.9 Teaching Fellowships

Competency #3 of the Ph.D. program in Biostatistics is that graduates should be able to teach statistical theory or methodology at multiple levels. To meet this competency, students are generally required to serve as a teaching fellow (TF) for at least one 4-credit², semester-length course offered by the Department of Biostatistics in each year they are in the program beyond their G1 year (i.e., G2 and beyond). The sole exception to this is when a student is funded as a research assistant on a collaborative grant (i.e., a 100% appointment, corresponding to 20 hours a week), for which the aims/papers will not directly contribute to the student's dissertation. However, regardless of funding, to fulfill the competency, students must serve as TF for at least two 4-credit courses during their time in the program.

²Griffin GSAS credits for a full semester course equal 5 credits at Harvard Chan.

As appropriate, and with permission from their academic/dissertation advisor and the Director of Graduate Studies, students may take on additional TF responsibilities for extra compensation. Finally, bearing in mind that University policy is that instruction is in-person, TFs are expected to be on-site as they fulfill their responsibilities.

The department's current TF Guidelines may be found here (https://content.sph.harvard.edu/biostats/publications/handbook/TF_Guidelines.pdf). See Section 2.4.8 in this handbook about teaching awards.

2.3.10 Teaching/Research Credits

In addition to regular coursework, Ph.D. students may register for BIST 311 which is used to indicate that a student has received a TF appointment, and should be registered for the duration of the course assigned (2 credits for a 2 credit course, etc.). BIST 311 credits must be approved by the Senior Manager of Academic Services.

For independent study with a faculty member which is not directly related to dissertation work, or research work done prior to passing the written qualifying exam, Ph.D. students should cross-register for a BST 300 Independent Study section with the Associate Chair, giving a short description of their research and including contact information for their supervising faculty member in their petition to enroll. Students should discuss with the corresponding research supervisor the credit hours needed, and the scope of the work involved before enrolling. If the research supervisor is not based at Harvard Chan, the student will need to find a member of the Department of Biostatistics to review your progress, even if they are not involved in the project day-to-day. At the time of registration, students should also send an email to the Senior Manager of Academic Services (cc'ing the research supervisor) with the information about the project. All BST 300 sections are graded as pass/fail. Students are discouraged from taking more than 4 credits of BST 300 in any single semester.

Once students have passed the written qualifying examination, identified a dissertation advisor, and are working on their dissertation research, BIST 350 should be used. Students may register for a maximum of 16 credits of BIST 350 per semester, as needed, to maintain full-time status.

2.4 Additional Policies and Procedures

2.4.1 Residency

The Kenneth C. Griffin Graduate School of Arts and Sciences requires that each student have a minimum of two years of full-time study in residence. With the program, however, more time in-residence may be needed to ensure satisfaction of the TF requirements (see Section 2.3.9).

2.4.2 Funding

As part of the offer of admission, the Ph.D. Program in Biostatistics provides a guarantee of five years of full funding that covers stipend/salary, tuition and health insurance. The guarantee is contingent on the student remaining in good standing within the program and making appropriate progress towards their degree. Beyond this time, departmental policy is that students engage with their dissertation advisors for funding, often in collaboration with the department. Note, throughout its 70+ year history, a student has never left the Ph.D. Program in Biostatistics due to a lack of funding.

The Department's main source of funding students, especially in years G1 and G2, is through our 4 NIH training grants, however several sources of funding may be available to support students during their time in the program, including: scholarships from the Kenneth C. Griffin Graduate School of Arts and Sciences, departmental gift funds, methodologic grants (typically with an advisor or co-advisor as PI), and collaborative grants (typically with a clinical or public health researcher as PI).

Some sources of funding are not available to all students, including NIH training grants, which are only available to US citizens and permanent residents. Additionally, some students may matriculate with their own sources of funding in place, including NIH F-31 predoctoral awards and grants from the National

Science Foundation (NSF). It is important to note that our funding model requires that students who have received an NSF grant must defer use of that funding until their G3 year and beyond.

Decisions regarding funding are made by the Department at the beginning of June prior to the subsequent fiscal year which runs from July 1- June 30. Our funding strategy endeavors to support 70+ doctoral students at once, and multiple factors impact decision making. Depending on our current funding portfolio and training goals, and the availability and stability of certain sources of funding, a student's funding model may change from year to year.

At the end of the G2 year and moving into the G3 year, the responsibility of funding shifts to a joint effort between the student, the dissertation advisor, and the Department. In order to work towards the 4th competency outlined in Section 2, once a student identifies a dissertation advisor (see Section 2.2.2), they should engage with them (and possibly their dissertation committee) to plan ahead for future funding opportunities.

2.4.3 Vacation

Although students are required to commit to full-time training year round, we recognize that students require some time away from their studies for a healthy work/life balance. We generally expect that students will take up to a month off during the summer, typically the last 2 weeks of May, and another 2 weeks to be coordinated with their summer project advisor or dissertation advisor. There will be an additional 2 weeks of vacation time allowed during the winter break, 1 week during the Harvard Chan spring break in March if not taking courses at other Schools on different calendars, and other designated Harvard holidays. Additional vacation time of more than 3-4 days must be approved in advance by a student's academic or dissertation advisor, as appropriate, as well as the Director of Graduate Studies.

2.4.4 Outside Employment

It is the policy of both Griffin GSAS and the Department to limit outside employment, as the doctoral program requires a full-time commitment to your training and research. Many of the funding sources the program relies on, including NIH training grants, require that students do not have outside employment. Your dissertation advisor, training grant director, and the Director of Graduate Studies must review and approve in advance, and in writing, any requests to take on any additional employment, including extra paid TF'ing at Harvard Chan or elsewhere, summer TF'ing, and tutoring. In order to be considered, the proposed employment must be of limited duration and scope.

2.4.5 Summer Internships

Although students must maintain a full-time commitment to training year-round, some may choose to take on summer internships that are related to their doctoral training. Students who are transitioning between their G2 and G3 year or between their G3 and G4 year may request permission to participate with the same approvals required for outside employment as noted in Section 2.4.4. In any case, a summer internship may not start prior to the end of the previous Spring semester and must end by the beginning of the subsequent Fall semester.

Students must use the Summer Internship Proposal [form](#) prior to April 1st, and prior to actually applying for the internship. Decisions to participate in internships typically have implications for our funding model for the next year (see Section 2.4.2) so the Department will need all the information up front, and with as much advance notice as possible. For example, reappointment on NIH training grants may not always be possible after return from a summer internship. As a result, students should understand that failure to adhere to these policies may result in an automatic non-approval and/or a narrowing of options available for future funding.

Finally, international students may need to adhere to further regulations regarding internships, and must also consult with the Harvard International Office (HIO) prior to applying for any summer internship.

2.4.6 Transfer of Coursework

The Department of Biostatistics does not allow courses taken elsewhere to count towards the residency requirement. However, students may occasionally be permitted to use graduate level courses in Biostatistics or related areas taken at other universities to satisfy some Departmental requirements for the Ph.D. degree (e.g., core courses, epidemiology requirement, consulting requirement). Generally, when core courses are waived, it is not necessary to make up the credit in other biostatistics courses. In addition, students funded on certain training grants which require laboratory rotations may be able to request exemption from one or more rotations based on their prior rotations of a similar duration and nature conducted at other universities prior to admission.

To request a waiver of Departmental requirements on the basis of prior coursework, the student must petition the Director of Graduate Studies for approval and complete the required form provided on the Griffin GSAS website. Students who have completed courses through the Harvard Tuition Assistance Program (TAP) or been classified as a Harvard Special Student complete one form, while those completing graduate coursework elsewhere complete a different form found on the Griffin GSAS website (<https://gsas.harvard.edu/registration/credit-completed-graduate-work>). For students completing graduate work outside of Harvard, the petition should contain a course description and syllabus. An official transcript indicating the grade received must be on file, or submitted with the petition. Each request is considered on an individual basis. All waivers of departmental requirements must be approved by the Director of Graduate Studies.

2.4.7 WinterSession

All Ph.D. students are expected to be at full-time status for the Fall and Spring semesters. Although WinterSession courses count toward Spring semester credits, Ph.D. students are expected to take 16 credits of coursework during the Spring semester (late January through May), plus any additional credits for WinterSession courses they may take. Ph.D. students are welcome to talk with their academic advisor, training grant director (if appropriate), the Director of Graduate Studies, or other faculty if they have any questions.

Ordinarily, Ph.D. students in their G1 year should take 2 (2.5 credits at Harvard Chan) credits of course work or, alternatively be engaged in a project with the approval of their academic advisor and, as appropriate, the training grant director for 30 hours/week for 3 weeks (or the equivalent if spread over 4 weeks). Students engaged in a WinterSession project do not ordinarily register for course credits. If a student takes 1 credit (1.25 credits at Harvard Chan) of course work, then they should also have an approved project for 15 hours/week for 3 weeks.

Students funded as an RA must make sure that their RA supervisor also approves their WinterSession activities.

2.4.8 Teaching Awards/Certificates

The Department has a longstanding tradition of recognizing outstanding teaching fellows. Each year faculty are encouraged to nominate TFs for a Certificate of Distinction in Teaching, in recognition of “outstanding teaching.” Receiving a Certificate of Distinction in Teaching is an honor that can be added to a student’s CV or teaching portfolio. Any TF who receives a 4.8 score or higher in teaching effectiveness in the Harvard Chan course evaluations, or is nominated by their instructor, will receive the department’s Certificate of Distinction in Teaching for the related semester.

Students may also win school-wide teaching awards or citations depending on their evaluation scores by the students in the course they are supporting. The Harvard Chan Teaching Assistant Awards are officially awarded during the School’s Convocation in May (<https://www.hsph.harvard.edu/office-of-education/teaching-and-mentoring-awards/>), and the Bok Center hosts receptions twice a year to distribute their Certificates of Distinction and Excellence in Teaching (<https://bokcenter.harvard.edu/teaching-awards>).

2.4.9 Departmental Colloquia, Award Seminars and Working Groups

Throughout the academic year students have the opportunity to attend various seminars, lectures, working groups, and other events. As part of the responsibilities outlined in their funding letters, students should plan to attend the weekly Colloquium Series, currently every Thursday at 4 pm. The series provides a unique opportunity for exposure to a wide range of cutting-edge topics from nationally and internationally recognized researchers. Within this series, there are 3 special award lectures (Lefkopoulou, Lagakos, and Zelen) throughout the year, as well as several Lightning Talks, which comprise of short 5-minute talks and are a good way to see what current research is going on in the department, make connections, and socialize with other students, postdocs, staff and faculty. Working groups are generally weekly or bi-weekly during the 1-2 pm lunch hour and are required for students funded on NIH training grants. All of these events provide an additional layer of training in the sense that they expose students to a variety of ways to communicate ideas, and to learn from the discussion and debate that arises.

2.5 Satisfactory Progress

Ordinarily, a student will complete their degree within 4 to 6 years after entering the program; the majority of students take 5 years. During their time in the program, a student's academic standing will be assessed by the Department on a regular basis to ensure that progress is being achieved at a reasonable pace. The Department adheres to the general satisfactory progress requirements as established by the Kenneth C. Griffin Graduate School of Arts and Sciences, described in this [section](#) of the [Griffin GSAS Policies](#). Furthermore, the Department will use the following additional criteria in establishing satisfactory progress:

1. Maintain full time status of 4 full semester courses (16 credits) minimum per semester.
2. No more than one grade below B in any academic year.
3. Students in their G1 year are expected to complete the four core biostatistics courses (see Section 2.3.1), each with a grade of B+ or higher.
4. Satisfactory performance on summer projects and as teaching fellows, research assistants, and/or computing assistants.
5. Students ordinarily will complete their written qualifying examination no later than the end of the summer following their G2 year.
6. Students will ordinarily complete their oral examination by the end of the G3 academic year.
7. Appropriate progress on the dissertation as reported in the Dissertation Progress Report form.

2.6 Master of Arts

No one is admitted as a candidate for the Master of Arts (AM), only for the Ph.D. Nevertheless, the requirements for the Master of Arts degree must be satisfied by all students as they move toward the Ph.D. and are ordinarily expected to be completed by the end of the fourth semester. The AM degree may be granted when these requirements are fulfilled. In addition, the Department may confer a terminal AM degree on students who will not be completing the requirements for the Ph.D. In order to satisfy the AM requirements, 40 credits of ordinarily graded courses are required from the doctoral core, the advanced doctoral core, or the two-year Master of Science in Biostatistics degree core (described in the [Biostatistics Masters Handbook](#)), or other courses approved by the Director of Graduate Studies. Upon fulfilling these requirements, students should submit an application for the AM degree to Griffin GSAS.

A ADMINISTRATIVE REQUIREMENTS FOR DOCTORAL PROGRAM

This Appendix provides an overview of the requirements, timing and deadlines in the Ph.D. Program. The details are based on a five-year timeline in the Program; five years is the most common length for students, although some complete the program in a shorter timeframe and others in a longer timeframe, and the sequences of events may be adjusted accordingly. Additional information is available through Kenneth C. Griffin Graduate School of Arts and Sciences [webpage](#). All forms linked below are also located on last page of this Graduate Student Handbook.

• Year One

– First Semester

- Complete Research Ethics requirement (HPM 548 or other approved RCR course).
- Complete Public Health requirement (currently ID 100P).
- Complete or ask for waivers of fall core courses (BIST 230 and BIST 232) that you intend to waive by emailing the Senior Manager of Academic Services with details about the course(s) taken or experience that you have that may qualify you for a waiver.
- May begin taking courses to count toward completion of cognate.

– Second Semester

- Complete or waive spring core courses (BIST 231 and BIST 234).
- Search for independent research project (Section 2.3.5). Turn in [proposal form](#) about independent research project to the Senior Manager of Academic Services by January 15.
- Begin that independent research with a faculty member (BST 300) for 4 (5 Harvard Chan) credits.
- Start to take advanced core courses if applicable.
- Continue completion of cognate-related courses.
- Turn in an updated description (if changes made) of the planned summer research work by May 1 (by email to Senior Manager of Academic Services).

– Summer

- Begin work on summer project (splitting ten-week period between independent research project and studying for qualifying exam).
- Take qualifying exam in late summer.
- Attend TF training sessions in Harvard Chan orientation week (late August).

• Year Two

– Third Semester

- Resume work on independent research project through the fall semester via independent study with faculty member (BST 300) for a maximum of 4 (5 Harvard Chan) credits.
- Take advanced core courses.
- Continue completion of cognate-related courses.

– Fourth Semester

- Present on independent research project (Section 2.3.5) in January.
- Take advanced core courses.
- Continue completion of cognate-related courses.
- Prior to April 1, if planning to request permission to apply for a summer internship, submit a Summer Internship Proposal [form](#) before pursuing the internship (Section 2.4.5).
- If written qualifying exam passed (1st attempt), choose dissertation advisor. Notify Senior Manager of Academic Services of your choice by April 15.
- Turn in your [PhD Degree Form](#) by May 1.
- AM degree “along the way” should be completed, and degree application should be submitted by Griffin GSAS deadlines.

• **Year Three**

– Fifth Semester

- Take advanced core courses.
- Continue completion of cognate-related courses if needed.
- If written qualifying exam passed (1st attempt), turn in the [Oral / Dissertation Committee nomination form](#) by October 15.
- If written qualifying exam passed (1st attempt), turn in your first [Dissertation Progress Report](#) (due twice a year) by November 1.

– Sixth Semester

- Take advanced core courses.
- Continue completion of cognate-related courses if needed.
- Complete consulting requirement and add information to Dissertation Progress Form below.
- Turn in [Dissertation Progress Report](#) by May 1.
- [Schedule](#) and complete Oral Qualifying Exam by March 31 (if written qualifying exam was passed on 1st attempt).
 - Circulate the written report for the Oral Qualifying Exam to the Dissertation Committee at least two weeks before the exam takes place.
- If qualifying exam passed on 2nd attempt, choose dissertation advisor. Notify Senior Manager of Academic Services of your choice by February 15.
- Turn in the [Oral / Dissertation Committee nomination form](#) within three months of choosing a dissertation advisor (by May 15 if written qualifying exam was passed on 2nd attempt).
- If written qualifying exam passed on 2nd attempt, turn in your first [Dissertation Progress Report](#) (due twice a year) by May 1.

• **Year Four**

– Seventh Semester

- Take advanced core courses.

- Continue completion of cognate-related courses if needed.
- Schedule** and complete Oral Qualifying Exam by October 15 (if written qualifying exam was passed on 2nd attempt).
 - Circulate the written report for the Oral Qualifying Exam to the Dissertation Committee at least two weeks before the exam takes place.
- Eighth Semester
 - Take advanced core courses.
 - Continue completion of cognate-related courses if needed.
 - Turn in **Dissertation Progress Report** by May 1.

• **Year Five**

- Ninth Semester
 - Turn in **Dissertation Progress Report** by November 1.
- Tenth Semester
 - Turn in **Dissertation Progress Report** by May 1.
 - Apply for degree by **deadline**. Griffin GSAS requires that Ph.D. applicants file an Application for Degree by the dates listed on their academic calendar. (NOTE: The application deadlines are several months before graduation.)
 - Schedule your dissertation defense. Submit a **Dissertation Defense Scheduling Form** to the Department at least three weeks prior to the dissertation defense. Copies of the dissertation should be provided to the Dissertation Committee and to the Senior Manager of Academic Services at least two weeks prior to the defense. A Dissertation Acceptance Certificate will be completed by the Department before the dissertation defense and signed by the Dissertation Committee after the student's defense. In addition to the electronic dissertation submission, the original complete and signed Dissertation Acceptance Certificate must be included.

B DOCTORAL DEGREE FORMS

- **Biostatistics Ph.D. Degree Program Form**
https://content.sph.harvard.edu/biostats/publications/handbook/PhD_Degree_Form.pdf
- **Oral Examination Scheduling Form**
https://content.sph.harvard.edu/biostats/publications/handbook/Orals_Exam_Scheduling_Form.pdf
- **Summer Internship Proposal Form**
https://content.sph.harvard.edu/biostats/publications/handbook/Summer_Internship_Proposal_Form.pdf
- **Oral / Dissertation Committee Nomination Form**
https://content.sph.harvard.edu/biostats/publications/handbook/Dissertation_Committee_Nomination_Form.pdf
- **Dissertation Committee Nomination Change Form**
https://content.sph.harvard.edu/biostats/publications/handbook/Dissertation_Committee_Nominations_Change_Form.pdf
- **Dissertation Progress Report Form**
https://content.sph.harvard.edu/biostats/publications/handbook/Dissertation_Progress_Report_Form.pdf
- **Dissertation Defense Scheduling Form**
https://content.sph.harvard.edu/biostats/publications/handbook/Dissertation_Defense_Scheduling_Form.pdf