Biostatistics PhD Student Handbook

Graduate Programs in Public Health, 2021 - 2022
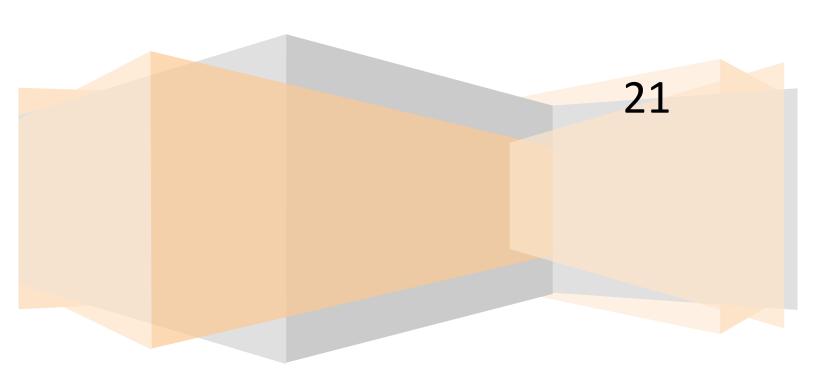
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Division of Biostatistics

The Division of Biostatistics sits within the Department of Public Health Sciences on the campus of the University of Miami Miller School of Medicine. The Division of Biostatistics was established in 2010 and its PhD program accepted its first student cohort in 2011. The program has graduated PhD students who have gone on to successful careers in both industry and academia. There are currently 13 faculty members in the Division, many of whom are nationally and internationally recognized with research spanning a wide range of theoretical and practical areas including big data analysis, machine learning, Bayesian nonparametric inference, small area estimation, model selection, casual inference, cancer outcome research, clinical trials, genomics and bioinformatics. Faculty in Biostatistics have active leadership roles across the University, including roles within the Biostatistics Collaboration and Consulting Core (BCCC), the Biostatistics, Epidemiology and Research Design (BERD) Core of the NIH-funded Clinical Translational Science Institute (CTSI), and the Biostatistics and Bioinformatics Shared Resource for the NCI-designated Sylvester Comprehensive Cancer Center. These and other roles provide conduits for students to engage in research with other University departments and for gaining high-level biostatistical experiences.

Familiarize yourself with procedures

As a PhD student in Biostatistics, you will need to familiarize yourself with procedures and requirements that are set forth by the Division of Biostatistics, the Department of Public Health Sciences, the Miller School of Medicine's Office of Graduate Studies (OGS), and the University of Miami's Graduate School.

- This handbook is meant to serve as an introduction and basic overview of these requirements as well as provide information on communications and logistics to assure your success as a student.

- It is important to note that this handbook is meant to provide you with basic information and general requirements of the doctoral program in Biostatistics, and **is not intended to be used in isolation** but rather in conjunction with the Graduate School catalog.

- In this regard, you should become familiar with the information on our website as well as the information on the University of Miami Graduate School's website, https://www.grad.miami.edu. Many of the required forms (e.g., admission to candidacy, certificate of defense and formatting of the dissertation) to be completed during your doctoral program can be found there, which you will be responsible for.

Program Competencies

Upon completion of the Doctorate in Biostatistics (PhD) degree, all graduates will be able to:

1. Conduct original research on the theory and/or methodology of biostatistics.
2. Apply innovative theory and/or methods to scientific problems.

3. Apply appropriate advanced data analysis and management techniques to analyze epidemiologic data.
4. Communicate research findings and conclusions (written and oral) in a clear and concise manner
5. Serve as an expect biostatistician on collaborative scientific teams

Student Responsibilities

All graduate students at the University of Miami are subject to the general standards and requirements of the University and its various departments in regard to attendance, examinations, payment of fees, and conduct, as well as to the specific requirements of the Graduate School. The graduate student is expected to assume the initiative in completing all requirements at the time specified.

To preserve its ideals of scholarship, conduct, and character, the Graduate School reserves the right and the student by his/her registration concedes the right to require the withdrawal of any student for any reason deemed sufficient by the Graduate School at any time.

It is the responsibility of the student to be informed concerning all regulations and procedures required. In no case will a regulation be waived or an exception granted because a student pleads ignorance of the regulation or asserts that he/she was not informed of it by an advisor or other authority. The student should become familiar with the Academic Bulletin, including:

1. The section presenting the requirements for the degree to be undertaken.
2. The offerings and requirements of the major department.
3. The Graduate Student Honor Code.

Acknowledgement and Receipt

All PhD students are required to sign the acknowledgement and receipt form contained in Appendix A of the Biostatistics Student Handbook which provides a web link to the Biostatistics Student Handbook, the Graduate School Honor Code and the Academic Bulletin.

Code of Ethics

The Graduate Programs are committed to fostering an environment that supports the promotion of public health values and is conducive to professionalism and ethical standards for the responsible conduct of science and education. Graduate students agree to abide by the Graduate Student Honor Code.

The University of Miami expects all graduate students to adhere to the highest standards of ethics and academic integrity. All forms of academic fraud are strictly prohibited. These include but are not limited to plagiarism and/or cheating (whether it be in an examination, dissertation, thesis, research paper, research project, form of creative expression, experimental data, or any other academic undertaking) submitted for evaluation, presentation, or publication meets these standards.

Plagiarism

Plagiarism is explicitly outlawed at the University of Miami Miller School of Medicine, and each student who enters our programs signs a statement acknowledging this fact. **All students will be asked to sign and return the Acknowledgement of Plagiarism Policy located in Appendix B of this Biostatistics Student Handbook.** Students who are found to have plagiarized may be asked to withdraw from their degree program. Plagiarism is not always easy to define; students who are unsure whether a particular practice is acceptable are urged to discuss the issue with the faculty instructor or mentor.

Respect Diversity

Additionally, graduate students are expected to respect and appreciate the diversity of the community and to respect the rights of others, be they property, privacy, opinion, or expression. Students found to be in violation of these standards are subject to disciplinary actions by the student's program and/or the Graduate School through the process described in the Graduate Student Honor Code. All graduate students are bound by the rules and regulations of the University of Miami that apply to them.

Photography/Video Release

During the course of the year, you may be photographed or video-taped at various University sponsored events. With your consent, the photograph or video may be released for use on the Department of Public Health Sciences' webpage, social media pages, brochures, newsletter, or other media. These materials will be used primarily to highlight our Department's student activities and successes. Please acknowledge consent of use of photography on Appendix A.

Stages in the Doctoral Degree

After admission to the Doctoral Program, there are two major stages in your program to be completed prior to obtaining your PhD degree. These stages are the *Pre-Candidacy* and the *Candidacy* stages. Lack of progress throughout the program without documented reasons may be grounds for program dismissal.

Pre-Candidacy

As a Pre-Candidate, your three major tasks are to:

1. Complete the program course requirements.
2. Successfully pass the diagnostic exam administered at the conclusion of Year 1.
3. Successful pass the qualifying exam to become a PhD candidate.

Requirement 1: Completing Course Requirements

As a Pre-Candidate, a total of **67** course credits have to be completed. A breakdown is given below. Students must continually maintain a GPA of 3.0 over all courses. A student will be notified that he/she is not making sufficient progress if his/her cumulative GPA falls below 3.00 in any semester or if a single grade below a "B" is obtained in any course. Notification will be given in writing from the Graduate Programs Office immediately following the close of the deficient semester. The cumulative

GPA must be raised to at least a 3.00 by the end of the next semester in which registration occurs or the student will be required to withdraw from the Graduate Program. No longer than two (2) summer sessions or one fall or spring semester may pass without registration once a student has been placed on academic probation.

The PhD in Biostatistics consists of 37 credits of core coursework, 6 credits of introductory public health coursework, 12 credits of electives (electives must be 3 credit courses), and 12 credits of dissertation research for a total of 67 credits to complete the degree.

Core Coursework Requirements (37 credits):
- BST 603: Introduction to Probability Theory and Its Applications (3 credits)
- MTH 625: Introduction to Mathematical Statistics (3 credits)
- MTH 642: Statistical Analysis (3 credits)
- BST 610: Introduction to Statistical Collaboration (3 credits)
- BST 630: Longitudinal and Multilevel Data (3 credits)
- BST 640: Modern Numerical Multivariate Methods (3 credits)
- BST 650: Topics in Biostatistics Seminar (1 credit per semester; taken for 4 semesters)
- BST 665: Design and Analysis of Clinical Trials (3 credits)
- BST 675: Intermediate Probability (3 credits); given in alternate years of BST 690
- BST 676: Introduction to Generalized Linear Models (GLM) (3 credits)
- BST 680: Advanced Statistical Theory (3 credits)
- BST 690: Theory of Survival Analysis (3 credits); given in alternate years of BST 675
- BST 691: High Dimensional and Complex Data (3 credits)

Public Health Requirements (6 credits):
- EPH 600: Introduction to the Science and Practice of Public Health (3 credits)
- EPH 621: Fundamentals of Epidemiology (3 credits)

Electives (4 courses each of 3 credits, for total of 12 credits):

Some examples are given below:

- BST 670 Bayes Data Analysis Theory and Computing
- MTH 721 Theoretical Probability
- ECE courses in machine learning
- CSC courses
- MAS courses

Dissertation (12 credits):
- BST 830: Doctoral Dissertation (pre-candidacy, **11 credits**)
- BST 840: Doctoral Dissertation (post-candidacy, **1 credit** taken during student's last semester when they defend their dissertation)

Requirement 2: Diagnostic Exam

The first year diagnostic examination held at the end of Year 1 is comprised of 7 questions, each worth 10 points, for a total of 70 points that evaluates a student's knowledge and understanding of core first year course material. There are two possible outcomes: unconditional pass and fail. An unconditional pass requires a score of 40/70 or higher. Otherwise the result is a fail score.

Students **are required to unconditionally pass the exam in order to continue in the program**. One and only one retake is allowed (given during the summer prior to the second year starting). Students may appeal the results of the exam. Students wishing to do so should submit a formal written request to the Doctoral Program Director (Dr. Hemant Ishwaran) within 30 days of receiving the results of the diagnostic exam.

Requirement 3: Qualifying Exam

The qualifying exam (typically administered in year 3, 4 or 5) is based on a **prospectus** of approximately 100 pages in University of Miami format describing the research problem that will form the student's dissertation. Overall understanding and results of the student's proposed research topic is embodied by the prospectus. Student's should consider this document as a fairly polished version that will (with some work) become the student's final dissertation. The student's primary advisor will inform the student when the prospectus is at a stage suitable for presentation to the qualifying examination. Student's cannot move on to the examination stage without this approval.

Before considering the qualifying exam, the student must consult with their faculty advisor who must agree that the student is now far enough along in their work that they are now ready to take the exam.

Once approval is given, the student, in consultation with the faculty advisor, must assemble his/her own qualifying examination committee. The exam committee must consist of three to four University faculty, of which one (other than the faculty advisor who must be a member) are required to be a faculty members in the Division of Biostatistics with a Graduate Faculty Appointment. Faculty with appointments at other universities may serve on the committee with approval from the Biostatistics PhD Program Director.

The student presents the prospectus during a closed oral qualifying examination that takes a seminar format. The seminar presentation is evaluated by the examination committee. Evaluation is based on the importance and novelty of the methodology and likelihood of publication of the result(s) in top journal(s). Committee members will decide if the student can proceed to candidacy. Committee members will make suggestions for improvements as well as other recommendations which the student must take into consideration when writing their dissertation.

When a pre-candidate has passed the qualifying exam and satisfied all the requirements and is ready to advance to candidacy, the student should complete an Application for Admission to Candidacy for the PhD Form, which is available at https://grad.miami.edu/policies-and-forms/forms/index.html and submit this Application through Dynamic Forms. The Graduate School has strict deadlines for completing the requirements to advance to Candidacy, and it is the responsibility of the student to

check the website of the Graduate School and/or speak to the Doctoral Program Administrator regarding these deadlines. By University policy, no student may receive the degree in the same semester or summer session in which he or she is admitted to candidacy.

Candidacy

After successful completion of the qualifying examination and submission of forms, students advance to candidacy.   As a Candidate, your major tasks are to: (1) develop the approximately 100 page prospectus from your qualifying exam into the final dissertation proposal that executes/finalizes the research that was presented at the qualifying exam, and (2) successfully present and defend your dissertation to your dissertation committee in an open format, and receive their approval for your dissertation. In addition, it is highly recommended that you prepare and submit manuscripts based on your dissertation for peer-reviewed publication.

Detailed formatting requirements for the dissertation are found at https://grad.miami.edu/electronic-thesis-and-dissertation/index.html.   Students must consult this site often for all stages of their dissertation to ensure all Graduate School requirements are met. Dissertations previously submitted electronically are also available at this site. Please contact the Doctoral Program Administrator for a complete list of student names/dissertation titles available in Biostatistics.

Before considering the dissertation defense, student must consult with their faculty advisor who must agree that the student is ready to defend his/her dissertation. Once this approval is given, the student should form the dissertation committee (see details below regarding composition of the committee). It is the responsibility of the student to contact and form the dissertation committee (in consultation and collaboration from their faculty advisor and Biostatistics PhD Program Director). It is also the student's responsibility to provide polished (near finished) copies of the dissertation to the members well in advance of the actual dissertation presentation. This is necessary to allow members to carefully evaluate the dissertation.

Often the dissertation committee is the same as the qualifying examinations committee but must meet the following guidelines (in addition to guidelines imposed by the Graduate school):

1) Dissertation committees must have at least **four** members of which one of these must be the primary dissertation advisor.
2) The Chair of the Dissertation Committee must have a primary appointment in the Department of Public Health Sciences and a Graduate Faculty appointment with the Graduate Programs in Public Health.
3) At least three of the four members must have a Graduate Faculty Appointment in the Graduate Programs in Public Health.
4) The fourth member of the Committee can be an external to the Department or external to the University of Miami. The student must obtain approval from the Dissertation Chair for this fourth member.
5) The Committee must consist of at least two members with a Ph.D. in Biostatistics.

Upon formation of the dissertation committee, the dissertation committee form should be completed and submitted to the Graduate School via Dynamic Forms. This form can be found at https://grad.miami.edu/policies-and-forms/forms/index.html.   If the composition of the dissertation committee changes at any point during the dissertation process, students must resubmit the Committee Composition Change Request Form (through Dynamic Forms) to reflect the revisions.

Students are responsible for setting their defense date within the stated Graduate School deadline for the semester they plan to defend. A deadline is set and stated on each semester's academic calendar, available at https://grad.miami.edu/electronic-thesis-and-dissertation/defense-and-submission-deadlines/index.html.   After the oral defense date is scheduled, the student is to notify the Graduate Program Administrator (Heather Rose) as to the defense date of the dissertation. The student will then submit the Defense Notice Form to the Graduate School (through Dynamic Forms). A copy of the form is provided at: https://grad.miami.edu/policies-and-forms/forms/index.html.   The Doctoral Program Administrator will e-mail the Department notifying all faculty, students, and staff of the defense of the dissertation. It is the responsibility of the student to work with the Doctoral Program Administrator to secure space for the defense as well as to secure the necessary equipment (e.g., projector), if needed.

Following the dissertation presentation, the committee will have an opportunity to ask questions of the student about the dissertation, the defense, and other related issues. Following the questions, the student and all other outside persons will be asked to leave the room to allow the members of the dissertation committee to discuss the student's performance. The committee will decide whether the student has passed or failed the dissertation defense. Following this decision, the committee will invite the student to return in order to let them know of the committee's decision. If the student is not successful in defending the dissertation, the chair and the committee members will inform the students as to what the next steps are in his/her program of study. If a student is successful, the Certificate of Defense Form must be completed, signed by the dissertation committee members (student circulates electronically to the committee via Dynamic Forms).

Time Line and Time Limits for Degree Completion

In general, the doctoral program takes a total of 4-6 years. Generally the dissertation is presented within one year of the qualifying exam. The exact length of the program largely depends on how soon a student completes courses and passes his/her qualifying examinations and successfully completes and defends his/her dissertation.

A student must pass the diagnostic exam, complete all course work and the qualifying examination within 6 years from the date of first enrollment. All additional requirements must be completed within 8 years from the date of first enrollment.

Completion and Publication of the Dissertation

There are several steps students must take in the final stretch towards completing the dissertation and getting it published. It is strongly recommended that students visit the Graduate School website at http://grad.miami.edu/electronic-thesis-and-dissertation/post-defense-essentials/index.html for more detailed guidance on the parameters for completing the dissertation.

Students are strongly encouraged to speak to their Chair and other dissertation members about submitting peer-reviewed manuscripts for publication during their dissertation and immediately following their defense. http://grad.miami.edu/electronic-thesis-and-dissertation/copyright-and-publishing-information/index.html.

The University of Miami has strict deadlines for each term by which you must have completed all of your final requirements, including turning in the correct number of dissertation copies and electronic submission to the Graduate Schools. These deadlines can be found at http://grad.miami.edu/electronic-thesis-and-dissertation/defense-and-submission-deadlines/index.html.

Graduate Student Financial Support

The Department of Public Health Sciences has limited resources with respect to student financial support. The University will provide doctoral students with a tuition scholarship during their doctoral program (student must remain in good standing during their studies to receive tuition support). Additionally, students will receive a one-year stipend of $32,000 (effective June 1, 2021) for their first year of study only. After this time, students must work with their faculty advisor to find funding from a Department faculty member (or another faculty member in other departments) to support their stipend for the remaining years of their doctoral program. Additionally, students are strongly encouraged to work with their faculty mentor to seek their own funding (e.g., F31 or F30 dissertation awards through NIH, fellowships through foundations such as the Robert Wood Johnson Foundation, or other training fellowship across campus such as the fellowships from the Developmental Center for AIDS Research).

Students who are full-time employees and wish to continue to work during their doctoral program are allowed to do so. However, all students (regardless of employment status) must maintain full-time student status during the program (i.e., register for minimum of 9 credits during the fall and spring semesters during coursework completion, and/or 800 level dissertation credit). Additionally, students who elect regular employment (decline stipend status) cannot receive the one-year stipend of $32,000 or program coverage of the graduate student health insurance policy (if elected).

University employees will be subject to taxes on tuition support provided during their doctoral studies. Employees are encouraged to contact Benefits (305-284-3798) to discuss a plan for tax withholdings each calendar year.

Website Quick Reference Guide

There are many helpful websites that you can visit, not the least of which is our own Department of Public Health Sciences homepage at http://publichealth.med.miami.edu. Below are also links to other useful websites that has pertinent information for doctoral students:

University of Miami Tools/Resources: https://welcome.miami.edu/tools/index.html
Graduate School website: http://grad.miami.edu/about-us/welcome-and-overview/index.html
Miller School of Medicine, Office of Graduate Studies: http://biomed.med.miami.edu/

Graduate School Helpful Links and Resources: http://grad.miami.edu/about-us/resources/index.html
Doctoral Student and Faculty Forms: https://grad.miami.edu/policies-and-forms/forms/index.html

Appendix A: Acknowledgment of Receipt and Review

I, (Print Name)

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acknowledge receiving web link directions to access the 2021-2022 Department of Public Health Sciences Biostatistics Student Handbook, the UM Graduate Academic Bulletin and University Graduate Honor Code. I understand that it is my responsibility to familiarize myself with the requirements of the University of Miami, the University of Miami Miller School of Medicine, and my graduate program of study.

Biostatistics Student Handbook, 2021-2022

https://graduatestudies.publichealth.med.miami.edu/current-students/course-information/forms-handbooks/index.html

UM Graduate Academic Bulletin

http://bulletin.miami.edu/graduate-academic-programs/

UM Graduate Honor Code

https://doso.studentaffairs.miami.edu/_assets/pdf/policies/student_rights_and_responsibilities_handbook.pdf#page=10

Photography/Video Release Consent

Yes _____ My photograph/video may be reproduced and released for use by the University of Miami's Department of Public Health Sciences.

No _____ My photograph may not be reproduced and released for use by the by the University of Miami's Department of Public Health Sciences.

_____   Date_____

Signature

Appendix B: Acknowledgment of Plagiarism Policy

Plagiarism is a serious offense with serious consequences. Students who plagiarize can be dismissed from the University.

What is Plagiarism? Why is it Important? Merriam-Webster definitions for plagiarism:

- Using the words or ideas of another person as if they were your own words or ideas.
- Stealing and passing off-the ideas or words of another-as one's own.
- Using another's production without crediting the source.
- Committing literary theft.
- Presenting as new and original an idea or product derived from an existing source.[1]

In university courses, we are continually engaged with other people's ideas: we read them in texts, hear them in lecture, discuss them in class, and incorporate them into our own writing. As a result, it is very important that we give credit where it is due. Plagiarism is using others' ideas and words without clearly acknowledging the source of that information. ***Plagiarism is a violation of the scientific community's ethical standards and a violation of the University of Miami's Graduate Student Honor Code***.

How Can Students Avoid Plagiarism?

- **Learn what plagiarism is**. Many types of plagiarism exist-from cloning to recycling. Know the types of plagiarism to avoid them.
- **Understand how to cite your sources**. Confirm which style of citing sources your instructors expect as they have many to choose from. Know the style each instructor prefers. If you have a choice, choose one style and use it consistently.
- **Plan your assignment work**. Summarize your original idea and plan how you intend to express it. Create drafts and outlines, indicate what sources you intend to find, and explain how you intend to use them.
- **Know your subject**. The more familiar you're with the subject, the more likely you are to use your own words. The more sources you look at, the more familiar you'll become with the subject. Be sure to track your sources.
- **Take notes when you review sources**. Good note taking can help organize your thoughts and express someone else's ideas in your own words.
- **Cite your sources**. If you're unsure, err on the side of caution and cite your sources.
- **Be careful to clearly identify someone else's ideas and words**. Citing sources isn't enough. Be clear as to who said what. When it's due, give credit to your sources.

How to Use SafeAssign to avoid plagiarism?   SafeAssign is a tool available in Blackboard to help promote originality and create opportunities to help students identify how to properly attribute sources rather than paraphrase. SafeAssign is based on a unique text-matching algorithm capable of detecting exact and inexact matching between a paper and source material. Assignments are compared against several databases containing millions of articles dating from the 1990s to the present. After the comparison, a report is generated that details the percentage of text in your paper that matches existing sources. Visit the Blackboard Help page to learn how to create a SafeAssignment.

I, (Print Name) _____

acknowledge receipt of and understand the Plagiarism Policy.

Signature_____   Date_____