2022-2023 PROGRAM GUIDE: Master of Science - Biostatistics

Information in this document is updated annually. Please refer to the document for the year you entered the program. Student resources, policies, and procedures applicable to all School of Public Health graduate students can be found on the SPH website, www.ohsu-psu-sph.org.

Overview

Director: Rongwei (Rochelle) Fu, PhD
ohsu-psu-sph.org/ms-in-biostatistics

The Master of Science in Biostatistics program is designed to provide graduate level training in the application and theory of biostatistics, and seeks to serve those wishing to pursue career as an intermediate level biostatistician or apply for doctoral programs in Biostatistics. The MS program is also appropriate for individuals who have earned a Graduate Certificate in Biostatistics and wish to pursue further training, some clinical and translational researchers (e.g. K awardees or postdoctoral trainees), students in other graduate programs, and working professionals throughout the state and region (e.g. public health practitioners, laboratory scientists, data managers, database programmers and other research professionals).

Program Competencies

Graduates of this program will be able to:

- Apply intermediate to advanced biostatistics theory and techniques to design, plan, and manage data collection to conduct statistical analysis for own research projects or collaborative research teams.
- Translate broad research goals into specific questions and procedures for statistical analysis and interpretation of results in basic, clinical, translational, and public health research studies.
- Select and use appropriate statistical analysis software for assessment, decision-making, and information sharing (e.g., Stata, SAS, R, or other special programs).
- Communicate statistical methods and findings clearly and unambiguously to specialists and non-specialist audiences.

MS Biostatistics Program of Study

Course Number	Course Title	Credits
Required Coursework (40 Credits)		
BSTA 511	Estimation and Hypothesis Testing for Applied Biostatistics	4
BSTA 512	Linear Models	4
BSTA 513	Categorical Data Analysis	4
BSTA 514	Statistical Analysis of Time-to-Event Data	3
BSTA 517	Statistical Methods in Clinical Trials	3
BSTA 519	Applied Longitudinal Data Analysis	3
BSTA 530	Biostatistics Lab	3
BSTA 550	Introduction to Probability	3
BSTA 551	Statistical Inference I	3
BSTA 552	Statistical Inference II	3
PHE 513	Introduction to Public Health	3
EPI 512	Epidemiology I	4
Exam	*Comprehensive Examination: written section*	0; Pass
Exam	*Comprehensive Examination: lab section*	0; Pass

Elective Coursework (14 Credits)		
BSTA 500	Reading and Conference	1-3
BSTA 515	Data Management and Analysis in SAS	3
BSTA 516	Design and Analysis of Surveys	3
BSTA 521	Bayesian Methods for Data Analysis	3
BSTA 522	Statistical Machine Learning and Big Data	3
BSTA 523	Design of Experiments: Statistical Principles of Research Design & Analysis	3
EPI 513	Epidemiology II (Methods)	4
BMI 550	Computational Biology I	4
BMI 551	Computational Biology II	4
PSU STAT 567	Applied Probability 1	3
PSU STAT 568	Applied Probability 2	3
PSU STAT 580	Nonparametric Methods	3
	Other courses with Program Director's permission	
	Total Credits	**54**

MS: Biostatistics Recommended Course Sequencing

Below is a sample schedule. Other schedules are possible***; always consult your Faculty Advisor regarding your program of study and course selection to determine the schedule that fits best for you.*** If you receive federal financial aid, it's important to be aware of financial aid requirements when planning your schedule. Federal loans require at least 1/2 time enrollment (5 credits). Please refer to the OHSU's "Financial Aid Explained" and the Standard Enrollment Plan, paying particular attention to summer term, for more information.

Year 1			
Fall	**Winter**	**Spring**	**Summer**
BSTA 550 Intro to Problty (3 cr.)	BSTA 551 Math Stats I (3 cr.)	BSTA 552 Math Stats II (3 cr.)	BSTA 517 Stats Mthds Clinical Trials (3 cr.)
BSTA 511 Est/Hypothesis Testing for Applied Biostats (4 cr.)	BSTA 512 Linear Models (4 cr.)	BSTA 513 Categorical Data Analysis (4 cr.)	Comprehensive Exam: Written
PHE 513 Intro to Pblc Hlth (3 cr.)	Elective	Elective	EPI 512 Epidemiology I (4 cr.)
Year 2			
Fall	**Winter**	**Spring**	**Summer**
BSTA 519 Applied Longitudinal Data Analysis (3 cr.)	BSTA 530 Biostats Lab (3 cr.)	Comprehensive Exam: Lab	
EPI 512 Epidemiology I (4 cr.) if not already taken or Elective	BSTA 514 Statistical Analysis of Time-to-Event Data (3 cr.)	Elective	
Elective	Elective		

Grades

Students are not permitted to progress through the BSTA 511-513, or BSTA 550-552 course sequence unless they achieve at least a B- in each of the courses.

Biostatistics Comprehensive Exam

The biostatistics comprehensive exam is a degree requirement for students in the MS Biostatistics program. The comprehensive exam assesses students' achievement of program-level competencies, including assessment of the student's ability to integrate statistical knowledge and skills acquired in their biostatistical coursework. Students must demonstrate mastery of the subject matter, skills of critical thinking and independent problem solving, and interpretation of results in the context of research question. The MS comprehensive exam evaluates students' knowledge of both biostatistics theories and applied methods.

The MS biostatistics comprehensive examination comprises questions reflective of nine required courses:

- BSTA 511 Estimation and Hypothesis Testing for Applied Biostatistics
- BSTA 512 Linear Models
- BSTA 513 Categorical Data Analysis
- BSTA 514 Statistical Analysis of Time-to-Event Data
- BSTA 517 Statistical Methods in Clinical Trials
- BSTA 519 Applied Longitudinal Data Analysis
- BSTA 550 Introduction to Probability
- BSTA 551 Statistical Inference I
- BSTA 552 Statistical Inference II

The comprehensive exam has two parts: a written part and a laboratory part, which are administered on separate days. The MS written exam has six questions. It is divided into two, two-and-a-half hour sections, with a one-hour break in between. The first section covers applied statistical questions from BSTA 511, 512, and 513. The second section covers theoretical statistical questions from BSTA 550, 551, and 552.

The lab part of the MS comprehensive exam covers materials from BSTA 514, 517 and 519, and takes four hours. It contains four questions: three data analysis questions, and an additional question to assess the appropriateness of the statistical methods used in a published journal article.

The exam is closed-book/notes. Scratch paper and all necessary formulas and tables will be supplied. Use of calculators is permitted. The lab part will require students to conduct data analyses using a statistical package. The format of the exam may be modified as necessitated by the circumstances. Students are allowed to take each part of comprehensive exam only after they have completed the relevant course work. Each year, students have two opportunities to take the examination, which will be scheduled on the Wednesday and Thursday of the second week of May, and the last week of August.

The comprehensive exam is graded Pass/No Pass, based on pre-specified criteria determined by the comprehensive exam committee. Each student is permitted two opportunities to pass the exam. Students must take both sections of the written part comprehensive exam the first time when they take the written part. Students with questions regarding the comprehensive exam should contact Rochelle Fu (fur@ohsu.edu), the Program Director.

Biostatistics & Design Program (BDP)

The Biostatistics & Design Program (BDP) is one of the OHSU shared resource cores, and is hosted by the Biostatistics group. BDP provides biostatistics support to basic, clinical and population science at all phases of research from grant submission, protocol development, and study design to statistical analysis, interpretation of analysis results and manuscript preparation. Many biostatistics faculty are involved in BDP work, and BDP also has many PhD and MS level staff providing statistical support and consultation. The BDP handles hundreds of

research projects each year and provides many internship opportunities for students. Students should talk to the director of BDP, Dr. Jodi Lapidus, for internship opportunities and/or research experience.

Knight Cancer Institute Biostatistics Shared Resources (Knight BSR)
The Knight Cancer Institute Biostatistics Shared Resource (Knight BSR) is supported by the National Cancer Institute's Cancer Center Support Grant. Knight BSR provides comprehensive and integrated biostatistics support to basic, clinical and population science researchers conducting cancer research at OHSU. The BSR also provides students with opportunities to work on ongoing cancer research projects. Students should contact the BSR Director, Dr. Byung Park, for opportunities for an internship and/or research experience.

Graduate Student Resources, Policies, and Procedures
Policies and procedures applicable to all School of Public Health graduate students can be found on the SPH website at https://ohsu-psu-sph.org/graduate-students-policies-and-procedures/. Please review the student policies and procedures listed there, including but not limited to the following sections:

- ☐ Advising
- ☐ Academic Standing
- ☐ Academic Dismissal
- ☐ Academic Dishonesty
- ☐ Codes of Conduct
- ☐ Educational Records Privacy
- ☐ Minimum Course Grade Requirements
- ☐ Recognition of Prior Earned Credit
- ☐ Course Waiver Policy
- ☐ Incomplete Coursework
- ☐ Course Approvals (Electives)
- ☐ Independent Study
- ☐ International Travel and Coursework
- ☐ Continuous Enrollment
- ☐ Leave of Absence
- ☐ Withdrawal Policy
- ☐ Time Limits
- ☐ Grievance Resolution
- ☐ Degree and Certificate Conferral

Academic resources and student support services available to SPH graduate students are listed on the SPH website, www.ohsu-psu-sph.org. Please review the resources listed there.