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

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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 510	Biostatistics Lab	3
BSTA 511	Estimation and Hypothesis Testing for Applied Biostatistics	4
BSTA 512	Linear Models	4
BSTA 513	Categorical Data Analysis	4
BSTA 514	Survival Analysis	3
BSTA 517	Statistical Methods in Clinical Trials	3
BSTA 519	Applied Longitudinal Data Analysis	3
BSTA 550	Introduction to Probability	3
BSTA 551	Mathematical Statistics I	3
BSTA 552	Mathematical Statistics II	3
PHE 511	Foundations of 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
BSTA 524	Statistical Methods for Next Generation Sequencing Data	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
	Total Credits	**54**

MS: Biostatistics Recommended Course Sequencing

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
EPI 512 Epidemiology I (4 cr.) - or - PHE 511 Fndtns of Pblc Hlth (3 cr.)	Elective	Elective	
Year 2			
Fall	**Winter**	**Spring**	**Summer**
BSTA 519 Applied Longitudinal Data Analysis (3 cr.)	BSTA 510 Biostats Lab (3 cr.)	Comprehensive Exam: Lab	
EPI 512 Epidemiology I (4 cr.) - or - PHE 511 Fndtns of Pblc Hlth (3 cr.)	BSTA 514 Survival Anlys (3 cr.)	Elective	
Elective(s)	Elective		

Always consult your Faculty Advisor regarding your program of study and course selection to determine the schedule that fits best for you.

Grades

Students are not permitted to progress through the BSTA 511-513 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 exam is graded Pass or No Pass, based on specific criteria set by the comprehensive exam committee, and is offered twice a year: on the Wednesday and Thursday of the second week of May, and the Wednesday and Thursday of last week of August.

The exam has two parts: a written part and a laboratory part, which are administered on separate days. Students may take each part of the exam only after completion of the relevant coursework. The MS written exam is further divided into two sections. MS students must take both sections of the written part the first time

they take the written exam; however, if only one section is passed, only the second section must be retaken. Each student is permitted two opportunities to pass the exam.

The exam is closed-book. Scratch paper and all necessary formulas and tables will be supplied. Use of calculators is permitted.

The MS Biostatistics 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 Survival Analysis
- BSTA 517 Statistical Methods in Clinical Trials
- BSTA 519 Applied Longitudinal Data Analysis
- BSTA 550 Introduction to Probability
- BSTA 551 Mathematical Statistics I
- BSTA 552 Mathematical Statistics II

The MS written exam has six questions total. 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.

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, and BDP also has many have 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.

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. Tomi Mori) or Associate Director (Dr. Byung Park) for opportunities for an internship and/or work 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, www.ohsu-psu-sph.org. 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

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