M.S. IN BIOSTATISTICS

http://www.biostat.med.miami.edu/academics/ms-in-biostatistics/

Overview

The Master of Science (MS) in Biostatistics is an applied graduate program intended for students seeking training in applied biostatistics. The program emphasizes applications and understanding of statistical concepts rather than theoretical and mathematical principles. The program is meant to be a terminal degree providing students with the necessary background for applying good biostatistical practices in real-world settings. Students will gain practical skills that can be applied immediately to a variety of data settings, which includes, but not limited to, the biological life sciences public health, medical studies, and health services outcome research.

The degree consists of 33 credits in a 10-month period (3 semesters) covering introductory probability and mathematical statistics, regression modeling, statistical computing, design and analysis of clinical trials, survival analysis, machine learning and fundamentals of epidemiology and public health. Enrichment will be provided by a statistical practicum and a seminar course varying with special topics.

Pre-requisites include:

1. Introductory calculus
2. Introductory computing
3. Introductory statistics/biostatistics

Admission Requirements

·   **Application** - Applicants must submit their application online through SOPHAS (https://sophas.org/), the centralized application service of the Association of Schools and Programs of Public Health (ASPPH) (https://www.aspph.org/). All application materials, including transcripts, test scores, statement of purpose/personal statement, resume/CV, and letters of recommendations, must be submitted directly through SOPHAS.

·   **Transcripts** - Applicants must submit official transcripts from all previously attended colleges and universities. All foreign transcripts must be official and submitted in the original language. If the original language is not English, an official translation must be submitted along with the transcript. All non-U.S. transcripts must be evaluated by the World Education Service (https://www.wes.org/) (WES) using ICAP course-by-course evaluation service.

·   **Prerequisite Courses** - The following courses should be taken as prerequisites:

> Introductory Calculus,
> Introductory Linear Algebra,
> Introductory Computing

·   **Standardized Test Scores** - The Graduate Record Exam (GRE) is not required for the MS in Biostatistics degree program.

·   **English Proficiency Exam** - International students are required to take the Test of English as a Foreign Language (TOEFL) (https://www.ets.org/toefl/) or the International English Language Testing System (IELTS) (https://www.ielts.org/en-us/). If English is *not* a student's native language, the TOEFL/IELTS requirement *may be waived* if the applicant holds an undergraduate or graduate degree from an academic institution within the United States or from select English-speaking countries.

·   **Resume/Curriculum Vitae** - Applicants must include a detailed resume including employment, public health experiences, community service, research, and academic or professional honors. Prior public health experience is not required in order to be considered for admission.

·   **Statement of Purpose/Personal Statement** - Applicants are required to submit a statement of purpose that details their academic interest in the program. The statement should discuss any experiences in public health including field experience, research, training, education or other related qualifications. Applicants should discuss how earning the degree will contribute to their future professional and career goals, as well as to the future of public health. Applicants should also address any academic deficiencies, if applicable.

·   **Letters of Recommendation** - Applicants must provide three letters of recommendation from individuals who are best able to assess their ability to be successful in a graduate degree program. Ideally, recommenders are recent professors, researchers or employers in a related field. Letters should be signed and on letterhead. Applicants will be asked to include the contact information of their recommenders on the SOPHAS application and recommenders will be sent an online form to complete via email.

For more information about our application process, please click here (https://graduatestudies.publichealth.med.miami.edu/admissions/application-process/). To obtain detailed curricula on all our program offerings, please visit our website (http://publichealth.med.miami.edu/).

For further information, please contact:

Ginelle Solis, EdD, MPA
Director of Admissions and Recruitment
Department of Public Health Sciences
University of Miami Miller School of Medicine
1120 N.W. 14 Street, Room 905 (R-669)
Miami, Florida 33136
Tel: 305-243-7246
Email: publichealthadmissions@miami.edu

Curriculum Requirements

Code	Title	Credit Hours
BST 605	Statistical Principles of Clinical Trials	3
BST 610	Introduction to Statistical Collaboration	3
BST 625	Survey of Statistical Computing	3
BST 650	Topics in Biostatistical Research [1]	2
BST 692	Data Science and Machine Learning for Health Research	3
EPH 600	Introduction to the Science Practice of Public Health	3
EPH 621	Fundamentals of Epidemiology	3
EPH 703	Advanced Statistical Methods I	4
EPH 705	Advanced Statistical Methods II	3
EPH 751	Survival Analysis in Clinical Trials	3
BST 603	An Introduction to Probability Theory and Its Applications	3
Total Credit Hours		**33**

[1]   BST 650 is taken for 1 credit in fall and 1 credit in spring.

Plan of Study (10-month)

First Year		
Fall		**Credit Hours**
BST 625	Survey of Statistical Computing	3
BST 650	Topics in Biostatistical Research	1
EPH 600	Introduction to the Science Practice of Public Health	3
EPH 703	Advanced Statistical Methods I	4
BST 603	An Introduction to Probability Theory and Its Applications	3
	Credit Hours	**14**
Spring		
BST 605	Statistical Principles of Clinical Trials	3
BST 650	Topics in Biostatistical Research	1
EPH 621	Fundamentals of Epidemiology	3
EPH 705	Advanced Statistical Methods II	3
EPH 751	Survival Analysis in Clinical Trials	3
	Credit Hours	**13**
Summer		
BST 610	Introduction to Statistical Collaboration	3
BST 692	Data Science and Machine Learning for Health Research	3
	Credit Hours	**6**
	Total Credit Hours	**33**

Mission

The mission of the Graduate Programs in Public Health is to develop leaders who can generate and translate knowledge into policy and practice to promote health and prevent disease in human populations.

Goals

Upon completion of the Master of Science (MS) in Biostatistics degree, all graduates will be able to:

- Apply epidemiologic and statistical methods to the measurement and study of population health and the prevention of infectious and chronic disease.
- Describe concepts in probability theory, random variation and commonly used statistical distribution and mathematical statistics.
- Develop sample size and power calculations for different study designs including those from clinical trials and observational studies.
- Perform a variety of basic and advanced statistical analyses (estimation and inference) including ANOVA, univariate and multiple regression models, generalized linear modeling, multivariate analysis, survival analysis, design of experiments, various new techniques from statistical learning theory, analyze cross-sectional data.
- Apply quantitative and reasoning skills, as well as content-area knowledge, to analyze data from epidemiological, clinical, observational and experimental studies.
- Interpret results from explanatory and descriptive data analysis and advanced statistical analyses to draw relevant conclusions from data.
- Develop a high level of competency in statistical programming both with SAS and R for both managing and analyzing data.
- Communicate effectively by producing summary reports, statistical analysis sections of papers, graphical summaries and tabular summaries of the data.
- Gain successful practical experience in statistical consulting, including interaction with research faculty in the health sciences.

Student Learning Outcomes

- Students will develop and demonstrate effective written and oral communication skills in the presentation of public health information.
- Students will demonstrate mastery of applied statistical data analysis techniques.
- Students will develop and demonstrate the ability to make scholarly contributions to the biomedical sciences through effective statistical collaborating efforts.
- Students will master at least one statistical analysis software for data management and statistical analysis techniques.