BIOSTATISTICS

http://www.biostat.med.miami.edu/

Dept. Code: BST

Degree Programs

- Master of Science in Biostatistics (MS)
- Doctor of Philosophy in Biostatistics (PhD)

Masters

Masters Program in Biostatistics

- M.S. in Biostatistics (http://bulletin.miami.edu/graduate-academic-programs/medicine/biostatistics/biostatistics-ms)

Doctoral

Doctoral Program in Biostatistics

- Ph.D. in Biostatistics (http://bulletin.miami.edu/graduate-academic-programs/medicine/biostatistics/biostatistics-phd)

Courses

BST 610. Introduction to Statistical Collaboration. 4 Credit Hours.
This course will introduce students to the art of statistical collaboration. The class will be highly interactive and will include an orientation to the process of statistical collaboration, individual and group assessment of the same consulting projects, and the completion of an individual "live" statistical collaboration project. For the final, live collaboration project, students will meet with the faculty and/or staff of the University of Miami who contributed their particular assigned consulting project(s). Students will need to research different statistical methods to find the best, feasible approach to address the particular consulting project. Students will present their plans for their own consulting projects in class and also help in the discussion/exploration of approaches for other student's consulting projects during class time. After finalization of the analysis plan the student will complete the statistical analyses described within the plan and create a final report.

Components: LEC.
Grading: SUS.
Typically Offered: Fall & Spring.

BST 625. Survey Of Statistical Computing. 3 Credit Hours.
This three credit course aims to familiarize students with the basic use of SAS and R for routine statistical analysis and prepare them for more advanced courses and/or thesis research. Statistical computation will be illustrated with examples in medical research, biological study and business. The focus of the course is on the computing environment, therefore a thorough discussion of statistical theories will not be provided. It is expected that students will already be prepared statistically.

Components: LEC.
Grading: SUS.
Typically Offered: Spring.

BST 630. Longitudinal and Multilevel Data. 3 Credit Hours.

Components: LEC.
Grading: SUS.
Typically Offered: Fall.

BST 640. Modern Numerical Multivariate Methods. 3 Credit Hours.
This course covers multivariate topics from both a classical as well as modern perspective. Topics to include: Multivariate Normal Distribution; Spectral Decomposition; Principal Component Analysis; Canonical Correlation Analysis; Newton's Method; Steepest Descent; Gradient Boosting; Coordinate Descent Algorithms; Trees; Forests; Discriminant Analysis. The R programming language (http://www.r-project.org) will be used extensively throughout the course for computation and statistical analysis.

Components: LEC.
Grading: GRD.
Typically Offered: Spring.

BST 649. Advanced Individual Study. 1-3 Credit Hours.
Individual work on a special project under faculty guidance.

Components: LEC.
Grading: GRD.
Typically Offered: Fall, Spring, & Summer.

BST 650. Topics in Biostatistical Research. 1 Credit Hour.

Components: LEC.
Grading: SUS.
Typically Offered: Fall & Spring.

BST 660. Spatial Statistics. 3 Credit Hours.

Components: LEC.
Grading: CNC.
Typically Offered: Fall.

BST 665. Design And Analysis Of Clinical Trials. 3 Credit Hours.
This course covers multivariate topics from both a classical as well as modern perspective. Topics to include: Multivariate Normal Distribution; Spectral Decomposition; Principal Component Analysis;Canonical Correlation Analysis; Newton's Method; Steepest Descent; Gradient Boosting; Coordinate Descent Algorithms; Trees; Forests; Discriminant Analysis. The R programming language (http://www.r-project.org) will be used extensively throughout the course for computation and statistical analysis.

Components: LEC.
Grading: GRD.
Typically Offered: Spring.

BST 670. Advanced Individual Study. 1-3 Credit Hours.
Individual work on a special project under faculty guidance.

Components: LEC.
Grading: SUS.
Typically Offered: Fall & Spring.

BST 670. Bayes Data Analysis: Theory And Computing. 3 Credit Hours.
This course will introduce students to the art of statistical collaboration. The class will be highly interactive and will include an orientation to the process of statistical collaboration, individual and group assessment of the same consulting projects, and the completion of an individual "live" statistical collaboration project. For the final, live collaboration project, students will meet with the faculty and/or staff of the University of Miami who contributed their particular assigned consulting project(s). Students will need to research different statistical methods to find the best, feasible approach to address the particular consulting project. Students will present their plans for their own consulting projects in class and also help in the discussion/exploration of approaches for other student's consulting projects during class time. After finalization of the analysis plan the student will complete the statistical analyses described within the plan and create a final report.

Components: LEC.
Grading: SUS.
Typically Offered: Fall & Spring.

BST 665. Design And Analysis Of Clinical Trials. 3 Credit Hours.
This course covers multivariate topics from both a classical as well as modern perspective. Topics to include: Multivariate Normal Distribution; Spectral Decomposition; Principal Component Analysis; Canonical Correlation Analysis; Newton's Method; Steepest Descent; Gradient Boosting; Coordinate Descent Algorithms; Trees; Forests; Discriminant Analysis. The R programming language (http://www.r-project.org) will be used extensively throughout the course for computation and statistical analysis.

Components: LEC.
Grading: CNC.
Typically Offered: Fall.
BST 675. Introduction To Generalized Linear Models. 3 Credit Hours.
GLM's are an extension of the standard linear model to permit more
general outcomes. In this class, we will study GLM's in detail. By the
end of the course, we will examine recent extensions of GLMs. We will
provide a unifying framework for formulation, estimation and inference.
Throughout the course, real data applications from medicine will be
used and extensive use of the R programming language will be made to
implement ideas discussed.
Components: LEC.
Grading: GRD.
Typically Offered: Spring.

BST 680. Advanced Statistical Theory. 3 Credit Hours.
The first part of this course is a searching treatment of many of the
key ideas undergirding hypothesis testing and estimation. In particular,
several of the main theorems in mathematical statistics will be stated
and proved in full detail. By the end of the course, students will have
acquired enough background material for the treatment of a special
topic, through a mix of lectures and assignments. Topics will include
asymptotic expansions, information theory and non-parametrics.
Components: LEC.
Grading: GRD.
Typically Offered: Fall.

BST 690. Theory Of Survival Analysis. 3 Credit Hours.
Survival analysis is an important tool of statistic with many applications.
In this course, without losing sight of such applications, we will give
special emphasis to the probabilistic foundations, in terms of counting
processes and martingales. Topics include: Failure time models,
inference in parametric models, Cox models, counting processes and
martingales, likelihood, competing risks and analysis of recurrent event
data. The R programming language will be used.
Prerequisite: MTH 524, MTH 525, and BST 680.
Components: LEC.
Grading: GRD.
Typically Offered: Fall.

BST 695. Special Topics. 3 Credit Hours.
The course is designed to allow the listing of special topics within the
Division of Biostatistics degree programs and cross list topics with other
department’s offerings.
Components: LEC.
Grading: GRD.
Typically Offered: Fall & Spring.

BST 698. Major Paper. 3 Credit Hours.
The student is working on their culminating project for the degree. The
student is expected to explain a collection of related methods in some
branch of statistics, use several of them to solve a motivated problem,
explaining and contrasting the results. A faculty advisor and second
reader are required.
Components: THI.
Grading: GRD.
Typically Offered: Fall, Spring, & Summer.

BST 699. Thesis Project. 1-6 Credit Hours.
Components: LEC.
Grading: CNC.
Typically Offered: Fall, Spring, & Summer.

BST 830. Doctoral Dissertation (pre-candidacy). 1-12 Credit Hours.
Required of all candidates for the PhD. The student will enroll for credit as
determined by his/her advisor but not for less than a total of 24. Not more
than 12 hours of BST 730 may be taken in regular semester, nor more
than six in a summer session.
Components: THI.
Grading: SUS.
Typically Offered: Fall, Spring, & Summer.

BST 840. Doctoral Dissertation (Post-Candidacy). 1-12 Credit Hours.
Required of all candidates for the PhD. The student will enroll for credits
as determined by his/her advisor but not for less than a total of 24. Not more
than 12 hours of BST 740 may be taken in regular semester, nor
more than six in a summer session.
Components: THI.
Grading: SUS.
Typically Offered: Fall, Spring, & Summer.

BST 850. Research in Residence. 1 Credit Hour.
Used to establish research in residence for the PhD. after the student has
been enrolled for the permissible cumulative total in appropriate doctoral
research. Credit not granted. May be regarded as full-time residence as
determined by the Dean of the Graduate School.
Components: THI.
Grading: SUS.
Typically Offered: Fall, Spring, & Summer.