

Biostatistics

Department of Biostatistics

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Overview

** Not a baccalaureate degree program*

Biostatistics is the science of making decisions in the face of uncertainty. Its study provides a background for understanding numerical data and the process of making inferences from such data. Biostatistics is an invaluable tool for all scientific disciplines, as well as being a significant mathematical discipline in its own right. The Department of Biostatistics provides students with a calculus-based foundation in probability and statistics before branching into numerous areas of application. This foundation prepares students for career opportunities in government, business, health sciences and industry, or for graduate study in any quantitative discipline.

The Biostatistics department offers an undergraduate minor in Statistics. Please see [Degrees and Policies](#) for the minor requirements.

Statistics - Minor

Prerequisites

GPA 2.5 in the following lower division courses:

[MTH 141](#) (or [MTH 121](#) or [MTH 131](#))

[MTH 142](#) (or [MTH 122](#))

[STA 119](#)

Required Courses

[STA 301/MTH 411](#) Introduction to Probability

[STA 302/MTH 412](#) Introduction to Statistical Inference

[STA 403](#) Regression Analysis

[STA 404](#) Statistical Associations and Comparisons

Summary

Total credit hours required for the minor: 26

See [Baccalaureate Degree Requirements](#) for general education and remaining university requirements.

STA 111: Introduction to Probability and Statistics I

Credits: 1

Semester(s): Fall, Spring

Type: LEC/REC

Designed especially for students in the humanities or the social sciences. Focuses primarily on the fundamental ideas of probability, and introduces statistics.

Semester(s): Spring

Type: LEC

Recommended for undergraduate students in the health sciences. Covers basic statistical concepts and techniques such as descriptive statistics, regression and correlation, analysis-of-variance, survival analysis and categorical data analysis as it pertains to clinical experiments and epidemiological investigations.

STA 112: Introduction to Probability and Statistics II

Credits: 3

STA 119: Statistical Methods

Credits: 3

Biostatistics

Semester(s): Fall, Spring
Type: LEC

Covers topics in descriptive statistics, probability, inference, and experimental design, all of which are put together to draw conclusions from uncertainty through analysis of experimental data. Although a general statistical methods course, the material (through examples) is geared towards sciences majors, especially those in the health sciences. Looks into the underlying reasoning behind the techniques rather than just pure application.

STA 301: Intro to Probability

Credits: 3
Type: LEC

STA 302: Intro Stat Inference

Credits: 3
Type: LEC

STA 403: Regression Analysis

Credits: 3
Type: LEC

Covers regression analysis and introduction to linear models. Topics include multiple regression, analysis of covariance, least square means, logistic regression, and non-linear regression. The course includes a one-hour computer lab and emphasizes hands-on applications to datasets from the health sciences.

STA 404: Stat Compar & Assoc

Credits: 3
Pre-requisites: [STA 403](#) Or Permission of Instructor
Type: LEC

Advanced presentation of statistical methods for comparing populations and estimating and testing associations between variables. Topics include point estimation; confidence intervals; hypothesis testing; ANOVA models for 1, 2, and k way classifications; multiple comparisons; chi-square test of homogeneity; Fisher's exact test; McNemar's test; measures of association, including odds ratio, relative risks, Mantel-Haenszel tests of association, and standardized rates; repeated measures ANOVA; simple regression; and correlation.

STA 406: Introduction to Statistical Computing

Credits: 3
Pre-requisites: [STA 119](#) or permission of instructor
Type: LEC

The purpose of this course is to familiarize students with PC-based statistical computing applications for public health. This course will develop basic skills in the use of a statistical package through classroom demonstrations and independent lab assignments. The course will emphasize data definition, verification, descriptive and inferential statistics, and graphical presentation. The course should familiarize the students with the use of a statistical package and give them the skills needed for effective data management, data manipulation, and data analysis at a basic level.

STA 427: Introduction to Medical Statistics

Credits: 3

Semester(s): Spring
Type: LEC

Topics include descriptive statistics, probability concepts (such as independence and conditional probability), probability distributions of random variables, sampling distributions, estimation, confidence intervals, hypothesis testing, analysis of variance procedures, linear regression, and nonparametric methods. Computers and statistical packages are used throughout the course. Requires no extensive computer experience.