

STATISTICS (STAT)

STAT 1. Introduction to Statistics. 3 Units

Prerequisite(s): MATH 9 or three years of high school mathematics which includes two years of algebra and one year of geometry; completion of ELM requirement and the Intermediate Algebra Diagnostic Test.

General Education Area/Graduation Requirement: Math Concepts & Quantitative Reasoning (B4)

Term Typically Offered: Fall, Spring

Descriptive statistics, basic concepts of probability and sampling with the aim of introducing fundamental notions and techniques of statistical inference.

STAT 10A. Introductory Statistics with Developmental Mathematics. 3 Units

Term Typically Offered: Fall, Spring

Prepares students for STAT 10B that requires background in data analysis process, descriptive statistics and the concept of randomness. Topics include: Summarizing the data distribution graphically and numerically; reasoning about bivariate numerical data; linear correlation and regression; linear, quadratic and exponential functions as a way of modeling a correspondence between two variables; reasoning about bivariate categorical data; basic concepts of probability and the law of large numbers; conditional probability; discrete random variables; binomial distribution; and an introduction to continuous random variables. Lecture three hours.

STAT 10B. Introductory Statistics with Developmental Mathematics. 3 Units

Prerequisite(s): STAT 10A

General Education Area/Graduation Requirement: Math Concepts & Quantitative Reasoning (B4)

Term Typically Offered: Spring only

Continuation of STAT 10A. Stat 10B prepares students for research methods applications/ courses in various disciplines. Topics include: Continuous random variables and normal distribution; sampling distributions and the central limit theorem; confidence intervals and tests of hypotheses for means, proportions, difference in means and difference in proportions; and chi-squared tests for categorical data analysis. Lecture three hours.

STAT 50. Introduction to Probability and Statistics. 4 Units

Prerequisite(s): MATH 26A, MATH 30, or appropriate high school based AP credit.

General Education Area/Graduation Requirement: Math Concepts & Quantitative Reasoning (B4)

Term Typically Offered: Fall, Spring, Summer

Sample spaces, combinatorics, and random variables. Density and distribution functions. Expectation, variance, and covariance. The binomial, uniform, poisson, negative binomial, hypergeometric, exponential, gamma, beta, and normal distributions. Sampling distributions, estimation, and hypothesis tests. Students are given periodic writing assignments which encourage them to think through concepts of the course.

STAT 96. Experimental Offerings in Statistics. 1 - 6 Units

Term Typically Offered: Fall, Spring

When there is a demand from a sufficient number of qualified students, one of the staff will conduct a seminar on some topic in statistics.

STAT 103. Intermediate Statistics. 3 Units

Prerequisite(s): STAT 50 or instructor consent

Term Typically Offered: Spring only – even years

Review of hypothesis testing –one sample. Hypothesis testing –two sample, variance. Regression and correlation. Analysis of variance including two-way. Analysis of categorical data. Non-parametric tests, goodness of fit, and tests for randomness.

STAT 115A. Introduction to Probability Theory. 3 Units

Prerequisite(s): MATH 31 and either STAT 1 or STAT 50

Term Typically Offered: Fall only

Probability axioms, discrete and continuous random variables, functions of random variables, joint densities, expectation, moment generating functions. Chebyshev's inequality, transformations, weak law of large numbers, central limit theorem.

STAT 115B. Introduction to Mathematical Statistics. 3 Units

Prerequisite(s): STAT 115A.

Term Typically Offered: Spring only

Point Estimation, interval estimation, hypothesis testing, the multivariate normal distribution, non-parametric tests.

STAT 128. Statistical Computing. 3 Units

Prerequisite(s): (STAT 1 or STAT 50) and (MATH 26A or MATH 30) or consent of the instructor.

Computer methods for accessing, transforming, summarizing, graphing and making statistical inferences from data; focus is on command-line statistical software, but menu-driven software may be introduced; application of computer methods to solve problems selected from the areas of modeling, simulation, inference and statistical learning.

STAT 155. Introduction to Techniques of Operations Research. 3 Units

Prerequisite(s): MATH 31; STAT 50, STAT 103, or STAT 115A; MATH 31 may be taken concurrently.

Term Typically Offered: Spring only – odd years

Formulation and analysis of mathematical models with emphasis on real systems applications. Introduction to Queueing theory and Markov Processes for application.

STAT 196J. Statistical Computing. 3 Units

Prerequisite(s): STAT 1 or STAT 50, and MATH 26A or MATH 30

Term Typically Offered: Fall only

Computer methods for accessing, transforming, summarizing, graphing, and making statistical inferences from data. Both a command-line statistical software package such as R and menu-driven package such as SAS will be used. Students will learn to apply computer methods to solve problems selected from the areas of modeling, simulation, inference and statistical learning. The intent of this course is to provide students with the software skills needed for statistical work in industry or academia.

STAT 199. Special Problems. 1 - 6 Units

Term Typically Offered: Fall, Spring

Individual projects or directed reading. Open only to students who appear competent to carry on individual work. Admission to this course requires approval of the instructor in addition to the approval of the advisor and the Department Chair.

Credit/No Credit

STAT 215A. Introduction to Mathematical Statistics. 3 Units

Prerequisite(s): STAT 115A, STAT 115B; MATH 134 is recommended.

Term Typically Offered: Fall, Spring

Probability measure, conditional probability and independence, random variables, characteristic and moment-generating functions, modes of convergence.

STAT 215B. Topics in Introduction to Mathematical Statistics. 3 Units

Prerequisite(s): STAT 215A.

Term Typically Offered: Fall, Spring

Continuation of STAT 215A with topics selected from: Statistical Inference, Estimation Theory, Testing Hypotheses, Linear Models, Nonparametric Methods, Multivariate Analysis, Computer intensive methods in Statistics and Sampling Theory.

Note: May be taken twice with approval of Graduate Coordinator.

STAT 299. Special Problems. 1 - 6 Units

Term Typically Offered: Fall, Spring

Any properly qualified student who wishes to pursue a problem may do so if the proposed subject is acceptable to the department committee, the supervising instructor and the student's advisor.