

STATISTICS (STAT)

STAT 200 Probability and Statistics-GTMA13 Credits

Introduction to descriptive and inferential statistical methods. Topics include: types of random variables, graphical and numeric summaries of data, elementary probability, discrete and continuous probability distributions, sampling distributions, confidence intervals and hypothesis testing for one and two samples, correlation and regression, chi-squared tests, and one-way analysis of variance.

Prerequisites: MATH 110 or MATH 113.

Terms Typically Offered: Fall, Spring.

STAT 215 Statistics for Social and Behavioral Sciences4 Credits

Introduction to descriptive and inferential statistical methods, with specific applications for social and behavioral sciences. Topics include types of random variables; graphical and numeric data summaries; elementary probability; discrete and continuous probability distributions; sampling distributions; confidence intervals and hypothesis testing; correlation and regression; chi-squared tests; and one-way analysis of variance. Includes proficiency in software commonly used in the social sciences.

Prerequisites: MATH 110 or higher; and one of the following: ANTH 202, PSYC 150, SOCO 260, CRMJ 201, or POLS 101.

Terms Typically Offered: Fall, Spring.

STAT 241 Introduction to Business Analysis3 Credits

Introduction to descriptive, predictive, and inferential analysis techniques with business applications. Topics include summarizing data graphically and numerically; elementary probability; discrete and continuous probability distributions; sampling distributions; intervals and tests for one and two samples; correlation and regression; chi-squared tests; and one-way analysis of variance. Appropriate business and statistical software will be used.

Prerequisites: MATH 113 or higher.

Equivalent Course(s): CISB 241

Terms Typically Offered: Fall, Spring.

STAT 301 Computational Statistics3 Credits

Introduction to computational methods within statistical software, with a primary focus on R, SPSS, and Excel. Topics include inference on population means and variances, sampling from probability distributions, linear regression and correlation, analysis of variance, power of statistical tests, nonparametric methods, categorical data techniques, and graphics.

Prerequisites: STAT 200 or STAT 215 or STAT 241 or CISB 241.

Terms Typically Offered: Fall, Spring.

STAT 305 Statistics and Quality Control for Engineering3 Credits

Introduction to descriptive and inferential statistics, and principles of quality management. Includes descriptive statistics, probability distributions, hypothesis testing, regression analysis, control charts, total quality management, quality improvement process, process capability, gauge repeatability and reproducibility, six-sigma, risk assessment, quality audit and ISO 9000.

Prerequisites: MATH 135 or MATH 151, and CSCI 130.

STAT 312 Correlation and Regression3 Credits

Graphical, numerical, and theoretical least-squares analysis for simple and multiple regression and correlation, including inference methods, diagnostics and remedial measures, simultaneous inference methods, the matrix approach to regression and correlation analysis, and stepwise regression procedures. Use of statistical software.

Prerequisites: STAT 301.

Terms Typically Offered: Spring.

STAT 313 Sampling Techniques3 Credits

Methodology of simple random sampling, stratified, systematic cluster, and two-stage sampling. Estimation of sample size determination, and minimized costs of sampling are discussed. Use of resampling statistical software.

Prerequisites: STAT 200 or STAT 215 or STAT 241 or CISB 241.

Terms Typically Offered: Spring.

STAT 350 Mathematical Statistics I3 Credits

Calculus based mathematical development of discrete and continuous random variables. Topics include probability axioms and rules, Bayes' Theorem, discrete and continuous distributions, expectation, variance, moment generating functions, marginal and conditional distributions, bivariate distributions, transformations, sampling distributions and the central limit theorem.

Prerequisites: STAT 200 and MATH 253 (may be taken concurrently).

STAT 351 Mathematical Statistics II3 Credits

This course is a continuation of STAT 350 Mathematical Statistics I.

This course is a calculus-based theoretical study of point estimators by method of moments and maximum likelihood, confidence intervals, hypothesis testing, simple linear regression, analysis of variance, and nonparametric methods. Additional topics may include experimental design, quality control, multiple linear regression, and survival analysis.

Prerequisites: STAT 350.

STAT 395 Independent Study1-3 Credits

Course may be taken multiple times up to maximum of 6 credit hours.

STAT 396 Topics1-3 Credits

Course may be taken multiple times up to maximum of 15 credit hours.

STAT 425 Design and Analysis of Experiments3 Credits

Design and analysis of single and multiple factor experiments, fixed, mixed and random effects designs including multiple comparison procedures, transformations, fixed, mixed and random effects designs, completely randomized designs, randomized block designs, Latin square designs, and nested designs.

Prerequisites: STAT 301; and MATH 151 or MATH 135 or MATH 131 or MATH 121.

Terms Typically Offered: Fall.

STAT 430 Categorical Data Analysis3 Credits

Study of appropriate methods for the collection and analysis of qualitative data. Topics include inference for contingency tables, chi-square and nonparametric tests, logistic regression, modelling for multinomial responses, and generalized linear models.

Prerequisites: STAT 301.

Terms Typically Offered: Fall, Spring.

STAT 435 Introduction to Time Series3 Credits

Statistical methods for analyzing time series. Topics include stationarity, autocorrelation, ARIMA models, spectral analysis, filtering, forecasting, and GARCH models.

Prerequisites: STAT 301.

Terms Typically Offered: Fall, Spring.

STAT 460 Actuarial Exams Preparation3 Credits

Preparation for the Probability Exam (P Exam) as well as the Financial Mathematics Exam (FM Exam) from the Society of Actuaries.

Prerequisites: STAT 351.

Terms Typically Offered: Spring.

STAT 494 Seminar1 Credit

Discussions of specialized topics by students, faculty, or visiting professors. One-hour meeting per week.

Course may be taken multiple times up to maximum of 10 credit hours.

STAT 495 Independent Study1-3 Credits

Course may be taken multiple times up to maximum of 6 credit hours.

STAT 496 Topics1-3 Credits

Course may be taken multiple times up to maximum of 15 credit hours.