

# STATISTICS (STA)

- STA 512 Regression Analysis** **3 Credit hours**  
 Determining regression models; deriving parameter estimates using calculus; detailed coverage of tests of assumptions and remedial procedures (transformations and weighted least-squares); multiple and polynomial regression; tests and corrections for autocorrelation.  
**Pre-req:** STA 545 with a minimum grade of C.  
**Grade Mode:** Normal Grading Mode
- STA 513 Experimental Designs** **3 Credit hours**  
 Principles of experimentation; Analysis of variance; Latin square and related designs; Factorial designs, Response Surface; Robustness; Nested and Split-Plot designs.  
**Pre-req:** STA 545 with a minimum grade of C.  
**Grade Mode:** Normal Grading Mode
- STA 518 Biostatistics** **3 Credit hours**  
 Statistical skills for biological/biomedical research, with emphasis on applications. Experimental design/survey sampling, estimation/hypothesis testing procedures, regression, ANOVA, multiple comparisons. Implementation using statistical software such as SAS, BMDP. May not be used for any degree offered by the Department of Mathematics.  
**Grade Mode:** Normal Grading Mode
- STA 520 Nonparametric Statistics** **3 Credit hours**  
 Coverage of a variety of nonparametric or distribution-free markets for practical statistical inference problems in hypothesis testing and estimation, including rank procedures and randomization procedures.  
**Pre-req:** STA 545 with a minimum grade of C.  
**Grade Mode:** Normal Grading Mode
- STA 525 Sampling Design & Estimation** **3 Credit hours**  
 Coverage of the theory and applications of a variety of sampling designs; sample size determination; ratio and regression estimates; comparisons among the designs.  
**Grade Mode:** Normal Grading Mode
- STA 535 Statistical Data Mining** **3 Credit hours**  
 Introduction to statistical learning techniques for analyzing high dimensional data. Topics include data mining strategy, explanatory analysis, predictive modeling techniques and model assessment.  
**Grade Mode:** Normal Grading Mode
- STA 545 Probability and Statistics I** **3 Credit hours**  
 Probability spaces, conditional probability, and applications. Random variables, distributions, expectations, and moments.  
**Grade Mode:** Normal Grading Mode
- STA 546 Probability and Statistics II** **3 Credit hours**  
 Probability spaces, conditional probability, and applications. Random variables, distributions, expectations, and moments.  
**Pre-req:** STA 545 with a minimum grade of C.  
**Grade Mode:** Normal Grading Mode
- STA 564 Statistical Computing** **3 Credit hours**  
 Introduction to the commonly used statistical computing techniques, procedures and methods, with extensive use of R language and environment, and SAS for statistical computing and graphics. (CR/PR: STA 545 or STA 546)  
**Pre-req:** STA 545 with a minimum grade of C.  
**Grade Mode:** Normal Grading Mode
- STA 570 Applied Survival Analysis** **3 Credit hours**  
 Survival and hazard functions, parametric and non-parametric methods, models and inferences for survival data, proportional hazard, and regression diagnosis.  
**Pre-req:** STA 545 with a minimum grade of C.  
**Grade Mode:** Normal Grading Mode
- STA 580 Special Topics** **1-4 Credit hours**  
 Courses on special topics in statistics not listed among current course offerings.  
**Attributes:** No Textbook Required  
**Grade Mode:** Normal Grading Mode
- STA 585 Independent Study** **1-4 Credit hours**  
 A faculty supervised, individualized course of study of a topic in statistics.  
**Attributes:** No Textbook Required  
**Grade Mode:** Normal Grading Mode
- STA 634 Stat Mtds for Researchers** **3 Credit hours**  
 Aspects of statistical modeling including model building, adequacy assessment, inference, and prediction. Applications to social biological, and medical sciences; engineering; and industry.  
**Grade Mode:** Normal Grading Mode
- STA 660 Stochastic Processes** **3 Credit hours**  
 Theory and applications of Markov chains. (PR: MTH 545)  
**Pre-req:** STA 545 with a minimum grade of C.  
**Grade Mode:** Normal Grading Mode
- STA 661 Adv Math Statistics** **3 Credit hours**  
 Topics in mathematical statistics including distribution theory for functions of random variables, convergence concepts, sufficient statistics, finding optimal estimates for parameters, optimal test of hypotheses. (PR: MTH 546)  
**Pre-req:** STA 546 with a minimum grade of C.  
**Grade Mode:** Normal Grading Mode
- STA 662 Appl Multivariate Stat Methods** **3 Credit hours**  
 Introduction to multivariate statistical analyses and methodologies of various types of datasets that are commonly encountered in medical, business, engineering, science, and any other data intensive disciplines.  
**Pre-req:** STA 546 with a minimum grade of C.  
**Attributes:** No Textbook Required  
**Grade Mode:** Normal Grading Mode
- STA 663 Time Series Forecasting** **3 Credit hours**  
 Finding statistical models to represent various time-dependent phenomena and processes; coverage of a variety of forecasting techniques, with an emphasis on adaptive, regression, and Box-Jenkins procedures.  
**Pre-req:** STA 545 with a minimum grade of C.  
**Grade Mode:** Normal Grading Mode
- STA 664 Bayesian Statistics** **3 Credit hours**  
 An introduction to Bayesian Statistics with focus on Bayesian Modeling, inference and Data Analysis. Applications will be studies with appropriate statistical software.  
**Pre-req:** STA 545 with a minimum grade of D.  
**Grade Mode:** Normal Grading Mode

**STA 665 Advanced Stat Learning 3 Credit hours**

An overview of concepts and techniques in advanced statistical learning. Topics include supervised/unsupervised learning, kernel smoothing methods, trees, random forests, association rules, neural networks and support vector machines.

**Pre-req:** STA 535 with a minimum grade of D.

**Grade Mode:** Normal Grading Mode

**STA 670 Independent Study 1-4 Credit hours**

A faculty supervised, individualized course of study of a topic in statistics.

**Grade Mode:** Normal Grading Mode

**STA 681 Thesis 1-6 Credit hours**

Investigate a theoretical or applied statistics problem under faculty mentorship.

**Attributes:** No Textbook Required

**Grade Mode:** Normal Grading Mode

**STA 690 Special Topics 1-4 Credit hours**

Courses on special topics in statistics not listed among the current course offerings.

**Grade Mode:** Normal Grading Mode