Statistics (STA)

STA 301 Introduction to Data Science 3 Hours
An introduction to the principles and practice of data science for business applications. Explore tidying, summarizing, and visualizing data; statistical computing in R; linear regression; introduction to predictive modeling and out-of-sample model validation; uncertainty quantification using resampling methods; basic probability models, including the normal and binomial distributions; and statistical hypothesis testing.

STA 301H Introduction to Data Science: Honors 3 Hours
An introduction to the principles and practice of data science for business applications. Explore tidying, summarizing, and visualizing data; statistical computing in R; linear regression; introduction to predictive modeling and out-of-sample model validation; uncertainty quantification using resampling methods; basic probability models, including the normal and binomial distributions; and statistical hypothesis testing.

STA 309 Elementary Business Statistics 3 Hours
Training in the use of data to gain insight into business problems; describing distributions (center, spread, change, and relationships), producing data (experiments and sampling), probability and inference (means, proportions, differences, regression and correlation).

STA 309H Elementary Business Statistics: Honors 3 Hours
Training in the use of data to gain insight into business problems; describing distributions (center, spread, change, and relationships), producing data (experiments and sampling), probability and inference (means, proportions, differences, regression and correlation).

STA 119S, 219S, 319S, 419S, 519S, 619S, 719S, 819S, 919S Topics in Statistics 1-9 Hours
This course is used to record credit the student earns while enrolled at another institution in a program administered by the University's Study Abroad Office. Credit is recorded as assigned by the study abroad adviser in the Department of Information, Risk, and Operations Management. University credit is awarded for work in an exchange program; it may be counted as coursework taken in residence. Transfer credit is awarded for work in an affiliated studies program.

STA 129S, 229S, 329S, 429S, 529S, 629S, 729S, 829S, 929S Topics in Statistics 1-9 Hours
This course is used to record credit the student earns while enrolled at another institution in a program administered by the University's Study Abroad Office. Credit is recorded as assigned by the study abroad adviser in the Department of Information, Risk, and Operations Management. University credit is awarded for work in an exchange program; it may be counted as coursework taken in residence. Transfer credit is awarded for work in an affiliated studies program.

STA 235 Data Science for Business Applications 2 Hours
Examine data science for business applications at the intermediate level. Explore building and validating predictive models; advanced regression modeling, including an in-depth treatment of regression; models for binary outcomes; and causal inference.

STA 235H Data Science for Business Applications: Honors 2 Hours
Examine data science for business applications at the intermediate level. Explore building and validating predictive models; advanced regression modeling, including an in-depth treatment of regression; models for binary outcomes; and causal inference.

STA 140S, 240S, 340S, 440S, 540S, 640S, 740S, 840S, 940S Topics in Statistics 1-9 Hours
This course is used to record credit the student earns while enrolled at another institution in a program administered by the University's Study Abroad Office or the school's BBA Exchange Programs. Credit is recorded as assigned by the study abroad adviser in the Department of Information, Risk, and Operations Management. University credit is awarded for work in an exchange program; it may be counted as coursework taken in residence.

STA 371G Statistics and Modeling 3 Hours
Focuses on methods used to model and analyze data. Explores multiple regression models and their application in the functional areas of business, time-series models, decision analysis and the value of information, and simulation-based methods.

STA 371H Statistics and Modeling: Honors 3 Hours
Focuses on methods used to model and analyze data. Explores multiple regression models and their application in the functional areas of business, time-series models, decision analysis and the value of information, and simulation-based methods.

STA 372T Topics in Statistics 3 Hours

STA 372T.11 Computational Finance 3 Hours
Introduction to the analysis and implementation of numerical methods used in finance. Explore numerical techniques in derivative pricing and optimal asset allocation, such as Monte Carlo and quasi-Monte Carlo simulation, methods for solving partial differential equations, and dynamic programming.

STA 372T.16 Optimization Method in Finance 3 Hours
Explore quantitative methods and techniques in optimization and simulation, and their use in financial decision making. Discuss theory and application in portfolio selection, options and other derivative pricing, index tracking, risk measures, volatility estimating. Examine linear, quadratic, nonlinear, and integer programming; dynamic programming; robust optimization; Monte Carlo methods and variance reduction techniques. Emphasis will be placed on problem solving with advanced computational programming languages.

STA 372T.21 Time Series Forecasting 3 Hours
Examine statistical forecasting methods used in business. Discuss Box-Jenkins models; exponential smoothing models; ARCH/GARCH models for varying volatility in financial returns; seasonal adjustment of time series; tests for nonstationary of time series; and modeling multiple time series.

STA 375 Statistics and Modeling for Finance 3 Hours
Methods used to model and analyze data, especially as applied to problems related to finance. Explores regression models, time-series models, decision analysis and simulation-based methods.

STA 375H Statistics and Modeling for Finance: Honors 3 Hours
Methods used to model and analyze data, especially as applied to problems related to finance. Explores regression models, time-series models, decision analysis and simulation-based methods.

STA 376 Intermediate Statistics 3 Hours
Analysis of forecasting techniques and theory; macroeconomic models; long-range and short-term forecasting; forecasting for the firm, using case material.

STA 180, 280, 380 Topics in Seminar in Business Statistics 1-3 Hours
Selected topics in the applications of statistical methods to business problems.

STA 180.1, 280.1, 380.1 Correlation and Regression Analysis 1-3 Hours

STA 180.10, 280.10, 380.10 Mathematical Statistics for Applications 1-3 Hours
Applications-oriented treatment of mathematical statistics for graduate students who plan to use statistical methods in their research but do not need a highly mathematical development of the subject. Major focus on regression models and related methods. Extensive use of statistical software for data analysis and modeling. Emphasis on understanding how the mathematics of probability and statistics both enables and limits the data analysis that can be done.

STA 180.11, 280.11, 380.11 Analysis of Variance 1-3 Hours

STA 180.12, 280.12, 380.12 Applied Multivariate Methods 1-3 Hours

STA 180.13, 280.13, 380.13 Statistical Decision Theory 1-3 Hours
Development of the mathematical basis of statistical decision theory from both the Bayesian and the frequentist point of view.

STA 180.14, 280.14, 380.14 Risk Analysis and Management 1-3 Hours
The quantification and analysis of risk, considered from several perspectives: financial risk measures, strategic risk measures, stochastic dominance rules, chance constrained programming, and safety-first approaches.

STA 180.15, 280.15, 380.15 Research on Probabilistic Judgment 1-3 Hours
Research training and experience for graduate students and advanced Canfield Business Honors Program undergraduate students who are interested in probabilistic judgment.

STA 180.16, 280.16, 380.16 Probability and Science in the Courtroom 1-3 Hours
The role of probability and scientific reasoning in legal judgments: differences between probability evidence and other types of evidence; legal and psychological implications of these differences; the role of statistics, formal analyses, and expert opinions in legal decisions; their impact on judges and jurors.

STA 180.17, 280.17, 380.17 Predictive Modeling 1-3 Hours
Introduction to statistical methods for prediction including regression analysis, logistic and multinominal regression, classification and regression trees, bias-variance trade-off, cross validation, variable selection, principal component regression and partial least squares regression.

STA 180.18, 280.18, 380.18 Learning Structures and Time Series 1-3 Hours
Introduction to exploring data analysis, clustering, dimension reduction, networks, text timing, and time series.

STA 180.19, 280.19, 380.19 Time Series 1-3 Hours

STA 180.2, 280.2, 380.2 Design of Experiments 1-3 Hours

STA 180.3, 280.3, 380.3 Statistical Computing with SAS 1-3 Hours

STA 180.4, 280.4, 380.4 Nonparametric Methods 1-3 Hours

STA 180.5, 280.5, 380.5 Statistical Consulting 1-3 Hours

STA 180.6, 280.6, 380.6 Survey Research Methods 1-3 Hours

STA 180.7, 280.7, 380.7 Forecasting 1-3 Hours
Development of forecasting techniques for use in business applications.

STA 180.8, 280.8, 380.8 Cybernetics and the Law: Societal, Economic, and Other Problems 1-3 Hours

STA 180.9, 280.9, 380.9 Applied Linear Models 1-3 Hours
Theory and application of linear models in empirically oriented research in business.

STA 280N Topics in Statistics 2 Hours

STA 280N.1 Advanced Statistics and Econometrics with R 2 Hours

STA 381 Sampling 3 Hours
Theory of sampling; sample design, including stratified, systematic, and multistage sampling; nonsampling errors.

STA 184N, 284N, 384N Topics in Business Analytics 1-3 Hours
Selected topics in business analytics.

STA 287, 387 Business Analytics and Decision Modeling 2-3 Hours
Introduction to some of the basic concepts in quantitative business analysis that are used to support organizational decision making over various time frames. Explores methods that apply to all areas of an organization, with emphasis on financial decision making.

STA 287C Business Analytics and Decision Modelling for Executives 2 Hours
Examine risky decision-making with an emphasis on case studies that show how Excel models can be used to improve decision-making.