

Course	Title	Course Description	Prerequisites
BME 335	Engineering Probability and Statistics.	Restricted to biomedical engineering majors. Fundamentals of probability, random processes, and statistics with emphasis on biomedical engineering applications. Includes hypothesis testing, regression, and sample size calculations. The equivalent of four lecture hours a week for one semester. Offered on the letter-grade basis only.	Biomedical Engineering 303 or Computational Engineering 301, and Mathematics 408D or 408M with a grade of at least C- in each.
CE 311S	Probability and Statistics for Civil Engineers	Basic theory of probability and statistics with practical applications to civil engineering problems, including statistical inference and sampling. Additional subjects may include reliability and risk analyses, estimation and regression analyses, and experimental design. Three lecture hours and one laboratory hour a week for one semester.	Prerequisite: <u>Mathematics 408D</u> or <u>408M</u>
ChE 253K	Applied Statistics	Statistical methods such as data exploration and summary, least-squares fitting, probability and probability distributions, statistical inference and hypothesis testing, analysis of variance, design of experiments, statistical quality control, and use of professional statistical software. Two lecture hours a week and one recitation hour a week for one semester. Chemical engineering majors must make a grade of at least C- in this course.	Prerequisite: Credit with a grade of at least a C- or registration for <u>Chemical Engineering 317</u> ; and the following coursework with a grade of at least a C- in each <u>Chemical Engineering 210</u> and <u>Mathematics 427J</u> .
CSE 384R	Mathematical Statistics I.	Same as <u>Mathematics 384C</u> and <u>Statistics and Data Sciences 384</u> (Topic 2). The general theory of mathematical statistics. Includes distributions of functions of random variables, properties of a random sample, principles of data reduction, an overview of hierarchical models, decision theory, Bayesian statistics, and theoretical results relevant to point estimation, interval estimation, and hypothesis testing. Three lecture hours a week for one semester. Only one of the following may be counted: <u>Computational Science, Engineering, and Mathematics 384R</u> , <u>Mathematics 384C</u> , <u>Statistics and Data Sciences 384</u> (Topic 2).	Prerequisite: Graduate standing; and Mathematics 362K and 378K, or consent of instructor.
CSE 384S	Mathematical Statistics II	Same as <u>Mathematics 384D</u> and <u>Statistics and Data Sciences 384</u> (Topic 3). Continuation of <u>Computational Science, Engineering, and Mathematics 384R</u> and <u>Mathematics 384C</u> . Three lecture hours a week for one semester. Only one of the following may be counted: <u>Computational Science, Engineering, and Mathematics 384S</u> , <u>Mathematics 384D</u> , <u>Statistics and Data Sciences 384</u> (Topic 3).	Prerequisite: Graduate standing; Computational Science, Engineering, and Mathematics 384R, or Mathematics 384C; and Mathematics 362K and 378K, Statistics and Data Sciences 382, or consent of instructor.
ECE 351K	Probability and Random Processes.	Examine probability, random variables, statistics, and random processes, including counting, independence, conditioning, expectation, density functions, distributions, law of large numbers, central limit theorem, confidence intervals, hypothesis testing, statistical estimation, stationary processes, Markov chains, and ergodicity. Three lecture hours a week for one semester. Only one of the following may be counted: Electrical and Computer Engineering 351H, 351K, Electrical Engineering 351K.	Prerequisite: <u>Mathematics 427J</u> or <u>427K</u> with a grade of at least C-.
EDP 371	Introduction to Statistics.	Examine descriptive and inferential statistics; measures of central tendency and variability; standardized scores; confidence intervals; correlation and regression; probability and statistical inference; analysis of variance; and nonparametric statistics. Three lecture hours a week for one semester, with additional laboratory hours to be arranged.	
GOV 350K	Statistical Analysis in Political Science	Elementary statistical techniques and their applications to problems in political science. Three lecture hours a week for one semester.	Prerequisite: Six semester hours of lower-division coursework in government.
PSY 317	Statistical Methods in Psychology.	Recommended for majors who plan to do graduate work in psychology or related fields. Measures of central tendency and variability; statistical inference; correlation and regression. Three lecture hours a week for one semester.	Prerequisite: <u>Psychology 301</u> with a grade of at least C.
PSY 317L	Introduction to Statistics for the Behavioral Sciences.	Explore the R programming language, data visualization, data wrangling, descriptive statistics (measures of central tendency and variation), measures of association (correlation, regression). Examine inferential statistics including parametric tests (such as t-tests and ANOVA) and non-parametric tests (such as Kruskal-Wallis and chi-squared tests). Three lecture hours a week for one semester. <u>Psychology 317L</u> and <u>120R</u> may not both be counted.	
PSY 384M	Advanced Statistics: Inferential.	Same as Neuroscience 384M. Covers t-test, chi-square, analysis of variance, and nonparametric tests. Three lecture hours a week for one semester.	Prerequisite: Graduate standing, an undergraduate statistics course, and consent of instructor.
PSY 420M	Psychological Methods and Statistics.	Restricted to psychology majors. Explore the basic and intermediate scientific methods and statistical techniques commonly employed in psychological research. Three lecture hours and two discussion hours a week for one semester. <u>Psychology 418</u> and <u>420M</u> may not both be counted.	Prerequisite: Thirty semester hours of college coursework including Psychology 301 with a grade of at least C and Psychology 317L or 120R with a grade of at least C.
PSY 458	Experimental Psychology.	Techniques of psychological research illustrated in a series of laboratory experiments. Two lecture hours and three laboratory hours a week for one semester.	Prerequisite: Upper-division standing, <u>Psychology 301</u> and <u>418</u> or <u>420M</u> and with a grade of at least C in each, and a University grade point average of at least 3.25.

M 316L	Foundations of Geometry, Statistics, and Probability	Restricted to students in a teacher preparation program. An analysis, from an advanced perspective, of the basic concepts and methods of geometry, statistics, and probability, including representation and analysis of data; discrete probability, random events, and conditional probability; measurement; and geometry as approached through similarity and congruence, through coordinates, and through transformations. Problem solving is stressed. Three lecture hours a week for one semester. May not be counted toward the major requirement for the Bachelor of Arts, Plan I, degree with a major in mathematics or toward the Bachelor of Science in Mathematics degree. Credit for Mathematics 316L may not be earned after the student has received credit for any calculus course with a grade of C- or better, unless the student is registered in the College of Education.	Prerequisite: Mathematics 316K with a grade of at least C.
M 358K	Applied Statistics.	Exploratory data analysis, correlation and regression, data collection, sampling distributions, confidence intervals, and hypothesis testing. Three lecture hours a week for one semester.	Prerequisite: Mathematics 362K with a grade of at least C-.
M 378K	Introduction to Mathematical Statistics.	Same as Statistics and Data Sciences 378. Sampling distributions of statistics, estimation of parameters (confidence intervals, method of moments, maximum likelihood, comparison of estimators using mean square error and efficiency, sufficient statistics), hypothesis tests (p-values, power, likelihood ratio tests), and other topics. Three lecture hours a week for one semester. Mathematics 378K and Statistics and Data Sciences 378 may not both be counted.	Prerequisite: Mathematics 362K with a grade of at least C-.
M 385C	Theory of Probability.	Same as Computational Science, Engineering, and Mathematics 384K. Three lecture hours a week for one semester. Computational Science, Engineering, and Mathematics 384K and Mathematics 385C may not both be counted.	Prerequisite: Graduate standing and consent of instructor.
M 385 D	Theory of Probability.	Same as Computational Science, Engineering, and Mathematics 384L. Continuation of Computational Science, Engineering, and Mathematics 384K and Mathematics 385C. Three lecture hours a week for one semester. Only one of the following may be counted: Computational Science, Engineering, and Mathematics 384L, Mathematics 384L, 385D.	Prerequisite: Graduate standing; Computational Science, Engineering, and Mathematics 384K or Mathematics 385C; and consent of instructor.
ME 335	Engineering Statistics.	Fundamentals of probability, distribution theory, data analysis and statistics, interval estimation, hypothesis testing, and statistical quality control. Three lecture hours and one discussion hour a week for one semester.	Prerequisite: Mathematics 408D or 408M with a grade of at least C-.
SDS/SSC 301	Elementary Statistical Methods.	Covers the fundamental procedures for data organization and analysis. Subjects include frequency distributions, graphical presentation, sampling, experimental design, inference, and regression. Three lecture hours a week for one semester. Only one of the following may be counted: Educational Psychology 308 , Statistics 309 , 309H or Statistics and Data Sciences 301 .	
SDS/SSC 302F	Foundations of Data Analysis.	Introduction to data analysis and statistical methods. Subjects include random sampling; principles of observational study and experimental design; data summaries and graphics; and statistical models and inference, including the simple linear regression model and one-way analysis of variance. Three lecture hours and one laboratory hour a week for one semester. Only one of the following may be counted: Statistics and Data Sciences 302 , 302F , 306 .	
SDS/SSC 313	Introduction to Data Science.	Introduction to the principles and practice of data science. Explore R and reproducible data analysis; summarizing data using descriptive statistics; data visualization and storytelling; data wrangling and relational data; basic prediction and classification using regression models; and programming in R. The equivalent of three lecture hours a week for one semester. Only one of the following may be counted: Statistics and Data Sciences 313 , 322E , 348 .	
SDS/SSC 318M			
SDS/SSC 320E	Elements of Statistics.	Introduction to statistics. Subjects include probability; principles of observational study and experimental design; statistical models and inference, including the multiple linear regression model and one-way analysis of variance. R programming is introduced. Three lecture hours and one laboratory hour a week for one semester. Only one of the following may be counted: Statistics and Data Sciences 320E, 320H, and 328M.	
SDS/SSC 321	Introduction to Probability and Statistics.	Covers fundamentals of probability, combinatorics, discrete and continuous random variables, jointly distributed random variables, and limit theorems. Using probability to introduce fundamentals of statistics, including Bayesian and classical inference. The equivalent of four lectures hours a week. Statistics and Data Sciences 321 and 431 may not both be counted.	Prerequisite: Mathematics 408C, 408L, 408R, 408S, or 408Q with a grade of at least C-.
SDS/SSC 322E	Elements of Data Science.	Explore data science tools and examine data wrangling; exploratory data analysis and data visualization; markdown and data workflow; simulation-based inference; and classification methods. R programming is emphasized and Python programming is introduced. Three lecture hours and one laboratory hour a week for one semester. Only one of the following may be counted: Statistics and Data Sciences 313 , 322E , 348 .	Prerequisite: An introductory statistics course.
SDS/SSC 324E	Elements of Regression Analysis.	Explore the use of regression analysis in applied research and learn about multiple linear regression; ANOVA; logistic regression; random and mixed-effects models; and models for dependent data. Engage in the identification of appropriate statistical methods and interpretation of software output. R programming is introduced. Three lecture hours a week for one semester. Statistics and Data Sciences 324E and 332 may not both be counted.	Prerequisite: Statistics and Data Sciences 302F and Statistics and Data Sciences 322E or Statistics and Data Sciences 320E.

SDS/SSC 325H	Honors Statistics.	An introduction to the fundamental theories, concepts, and methods of statistics. Emphasizes probability models, exploratory data analysis, sampling distributions, confidence intervals, hypothesis testing, correlation and regression, and the use of statistical software. Three lecture hours a week for one semester. Statistics and Data Sciences 325H and Statistics and Scientific Computation 325H may not both be counted.	Prerequisite: Admission to the Dean's Scholars Honors Program in the College of Natural Sciences or consent of instructor.
SDS/SSC 378	Introduction to Mathematical Statistics.	Same as Mathematics 378K. Sampling distributions of statistics, estimation of parameters (confidence intervals, method of moments, maximum likelihood, comparison of estimators using mean square error and efficiency, sufficient statistics), hypothesis tests (p-values, power, likelihood ratio tests), and other topics. Three lecture hours a week for one semester. Mathematics 378K and Statistics and Data Sciences 378 may not both be counted.	Prerequisite: Mathematics 362K with a grade of at least C-.
SDS/SSC 384	Topics in Statistics and Probability.	Concepts of probability and mathematical statistics with applications in data analysis and research. Three lecture hours a week for one semester. Statistics and Data Sciences 384 and Statistics and Scientific Computation 384 may not both be counted unless topics vary. May be repeated for credit when the topics vary.	Prerequisite: Graduate standing; and Statistics and Data Sciences 382 (or Statistics and Scientific Computation 382), an introductory probability course and a statistics course, or consent of instructor.
SOC 317L	Introduction to Social Statistics.	Measures of central tendency and dispersion, the binomial and chi-square distributions, tests of hypotheses and parameter estimation, and simple correlation and regression. Three lecture hours and one laboratory hour a week for one semester. Required of all sociology majors.	
STA 301	Introduction to Data Science.	Restricted to students in the McCombs School of Business. 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. The equivalent of three lecture hours a week for one semester. Offered on the letter-grade basis only.	
STA 309	Elementary Business Statistics.	Restricted to students in the McCombs School of Business. 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). Three lecture hours a week for one semester. Only one of the following may be counted: Educational Psychology 308, Statistics 309, 309H or Statistics and Data Sciences 301. Offered on the letter-grade basis only.	Prerequisite: Mathematics 408Q or credit or registration for Mathematics 408D, 408L, or 408S.
STA 309H	Elementary Business Statistics: Honors.	Restricted to students admitted to the McCombs School of Business Honors Program. 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). Three lecture hours a week for one semester. Only one of the following may be counted: Educational Psychology 308, Statistics 309, 309H or Statistics and Data Sciences 301. Offered on the letter-grade basis only.	Prerequisite: Twenty-four semester hours of college credit, including Mathematics 408Q, 408D, 408L, or 408S.
STA 371G	Statistics and Modeling.	Restricted to students in the McCombs School of Business. 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. Three lecture hours a week for one semester. Only one of the following may be counted: Statistics 371G, 371H, 375, 375H. Offered on the letter-grade basis only.	Prerequisite: <u>Management Information Systems 301, 301H, or 310; Statistics 309 or 309H;</u> and credit or registration for <u>Business Administration 324 or 324H.</u>
STA 371H	Statistics and Modeling: Honors.	Restricted to students admitted to the McCombs School of Business Honors Program. 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. Three lecture hours a week for one semester. Only one of the following may be counted: Statistics 371G, 371H, 375, 375H. Offered on the letter-grade basis only.	Prerequisite: Management Information Systems 301, 301H, or 310; Mathematics 408D, 408L, 408M or 408S; Statistics 309 or 309H; and credit or registration for Business Administration 324H.
TC 310	Modes of Reasoning	Introduction to forms of quantitative reasoning: computer science, game theory, operations research, or statistics and probability. Three lecture hours a week for one semester. Philosophy 313Q and Tutorial Course 310 may not both be counted.	Prerequisite: Admission to the Plan II Honors Program.