

DECISION SCIENCES (DS)

DS 500 Accelerated Statistics 2 Credit Hours

This course will introduce fundamental concepts and methods in data analysis, probability, estimation, and statistical inference for application in management and management science. Topics include: basic probability theory, discrete and continuous random variables and distributions, sample and data analysis, sampling distributions, estimation, confidence intervals and hypothesis testing, introductory regression analysis, and utilization of statistical software packages. The course is designed to fulfill the statistics prerequisite for admission to SOM graduate degree programs, and is open only to those with strong mathematics backgrounds. Prerequisite: By permission of the Graduate Programs Office.

Restriction(s):

Can enroll if Class is Post-baccalaureate NCFD or Graduate

DS 503 Managerial Stats and Opt I 3 Credit Hours

To develop basic competence and judgment in the application of quantitative methods for the analysis of probabilistic decision problems. Topics include: structure of probabilistic decision problems, probability theory and applications, statistical estimation and hypothesis testing, data collection and analysis, and applications. Selected software packages are used in homework and laboratory sessions.

Restriction(s):

Can enroll if Class is Graduate

DS 520 Applied Statistical Modeling 3 Credit Hours

This course explores statistical modeling and analysis techniques for aiding managerial decision making. Topics include: introduction to descriptive statistics, sampling methods and sampling distribution, confidence interval estimation, one sample hypothesis tests, one-way and two-way analysis of variance, simple and multiple linear and nonlinear regressions, and time series forecasting. Selected software packages are used in exercises, projects, and business case examples.

Restriction(s):

Can enroll if Class is Graduate

DS 553 Managerial Stats and Opt II 3 Credit Hours

To develop basic competence and judgment in the application of quantitative analysis to the solution of decision problems. Topics include: univariate and multivariate regression analysis, one-way analysis of variance (ANOVA), linear programming, integer programming, and network models. Selected software packages are used in homework and laboratory exercises.

Prerequisite(s): DS 503

DS 570 Management Science 3 Credit Hours

To develop basic competence in introductory management science and operations research. Topics include: problem formulation and model development in optimization, linear programming (LP), duality theory, economic interpretation, and sensitivity analysis, introduction to integer programming (IP), special linear programs, network modeling, and introduction to non-linear programming (NLP). Selected software packages are used in laboratory exercises and in optimization project.

Restriction(s):

Can enroll if Class is Graduate

DS 630 Applied Forecasting 3 Credit Hours

This course explores various quantitative modeling methods used in forecasting. Topics include: moving averages, various smoothing techniques, trend- and seasonal forecasting, univariate- and multivariate regression based time series analysis (ARMA, ARIMA). Selected software packages are used in laboratory exercises and in an applied forecasting project.

Prerequisite(s): DS 520 or IMSE 514

DS 631 Decision Analysis 3 Credit Hours

This course entails study of analytic techniques for rational decision making that address uncertainty, conflicting objectives, and risk attitudes. Topics covered in the course include modeling uncertainty, rational decision making principles, representing decision problems with value trees, decision trees and influence diagrams; solving value hierarchies, decision trees and influence diagrams; defining and calculating the value of information, incorporating risk attitudes into the analysis and conducting sensitivity analysis.

Prerequisite(s): DS 520 or IMSE 514

Restriction(s):

Can enroll if Class is Graduate

DS 632 System Simulation 3 Credit Hours

In this course students will learn how to design, model, and implement discrete-event computer simulation models of real or conceptual systems. Simulation studies will be conducted using contemporary software such ProModel. Student will learn random number generation, applying distribution sampling, and conducting output analysis.

Prerequisite(s): DS 520 or IMSE 514

Restriction(s):

Can enroll if Class is Graduate

DS 633 Data Mining for Business Appl 3 Credit Hours

The purpose of this course is to provide students with both quantitative and qualitative exposure to the field of Data Mining, a topic of immense importance and relevant to the study of Business Analytics. Data Mining is the process of discovering meaningful correlations, patterns and trends in large data sets and employs statistical and mathematical techniques. Students will be exposed to theory, computation, tools & techniques to analyze repositories of data from a vast array of business applications with a view to implement successful business strategies aimed at improved decision-making. The course contents are representative of three primary areas of analytics- prescriptive, predictive, and descriptive that define the core of studies offered in our Masters of Science in Business Analytics program. Selected software packages are used in exercises to solve data mining problems. (F) (W)

Prerequisite(s): (DS 520 or IMSE 514) and DS 570

Restriction(s):

Can enroll if Class is Graduate

DS 635 Analytics Experience Capstone 3 Credit Hours

The purpose of this course is to provide students with an experience that allows them to demonstrate application of integrative knowledge aimed at addressing an industry relevant decision-making problem by drawing on the breadth and depth of the Business Analytics programmatic curriculum. The plan of studies requires that the student complete this course under the direction and guidance of the Instructor who may enroll the services of an industry expert for advice. Depending on the size and complexity of the problem, one or many students may be assigned to the project. The deliverables for the course are a detailed project report describing evaluation and analysis of the problem to be presented at a public setting. The course can be finished in one or two semesters. (F) (W)

Prerequisite(s): (DS 520 or IMSE 514) and DS 570 and DS 630 and DS 631* and DS 632*

Restriction(s):

Can enroll if Class is Graduate

Can enroll if Program is

DS 638 Adv Topics in Mgmt Science 3 Credit Hours

This is the second in Management Science offering advanced topics beyond the DS 570 course. Among the topics included are algorithms in-dynamic programming, nonlinear programming, game theory, goal programming, Markov chains, Markov decision processes, queueing theory, inventory theory, and simulation.

Prerequisite(s): DS 570

Restriction(s):

Can enroll if Class is Graduate

* An asterisk denotes that a course may be taken concurrently.

Frequency of Offering

The following abbreviations are used to denote the frequency of offering: (F) fall term; (W) winter term; (S) summer term; (F, W) fall and winter terms; (YR) once a year; (AY) alternating years; (OC) offered occasionally