DECISION ANALYTICS (DA)

DA 150 | ANALYTICS IN ACTION SEMINARS | 2 quarter hours
(Undergraduate)
In these seminars, students describe and assess how they have applied or are applying something that they have learned to their work in industry or community, and students learn from practicing decision analytics professionals about the specific opportunities and challenges these individuals encounter in their work with data. (2-4 quarter hours)

DA 200 | DATA ANALYTICS | 4 quarter hours
(Undergraduate)
This course is designed as an introduction to the emerging field of analytics, an inductive approach to gaining insights on big data, thus informing decision-making. It covers various fundamental techniques rooted in management and decision sciences to solve problems in various functional areas, such as marketing and production. In this course, students learn various analytical tools and demonstrate their ability to understand, present and discuss the results, thus building a strong foundation in supporting decision-making in a variety of scenarios. Major topics include the applications of logical and financial functions; data visualization and manipulation, what-if analysis; and linear programming for decision making. (4 quarter hours)

DA 220 | DATA MINING | 2-4 quarter hours
(Undergraduate)
In this course, students will be introduced to data mining and will learn techniques including cluster, classification, association, and decision tree analysis to discover patterns in datasets. Students are expected to have a good understanding of databases and parametric statistics prior to the course. The course is highly applied and hands-on, using a problem-based approach to problem solving. Pre-Requisites: IT 223 Data Analysis and IT 240 Introduction to Databases. (2-4 quarter hours)

DA 233 | APPLIED INFORMATION MANAGEMENT SYSTEMS | 4 quarter hours
(Undergraduate)
This course introduces students to the key concepts in the field of Management Information Systems (MIS) and enhances understanding of the issues that business organizations face when developing and managing information systems. In this course, students will be presented with a broad overview of the field to first examine the increasing impact of information technology in business organizations, and second, in preparation for more advanced courses in data analytics and information systems. Specifically, the three major topics covered include (1) e-businesses and networks, (2) databases, as well as (3) enterprise resource planning (ERP) and process models. These topics are designed to prepare students for further inquiry on web analytics, data mining, project management, supply chain management, as well as business in general. By completing the course, students should be better equipped to apply IT skills to solve business problems, to participate in IT projects, and to communicate more knowledgeably with IT professionals. (4 quarter hours)

DA 240 | TEXT ANALYTICS | 2 quarter hours
(Undergraduate)
Although analytics can be thought of as inductive data analysis, involving huge data sets, the data organizations face are not always quantitative. From the comments on rating scales to consumer reports, some quantitative scales can be arbitrary. Using a market-leading analytics tool, students will explore a different form of analytics ? text analytics ? to perform content analysis of unstructured textual documents, or textual data. The course takes a hands-on, scenario-based approach, thus enabling students to have multiple opportunities to apply their skills to different problems. Upon completion, students will not only learn about text analytics, but also have a strong grasp of a market-leading analytics tool. Pre-Requisite: Foundations of Analytics and IT 223 Data Analysis. (2-4 quarter hours)

DA 310 | DESCRIPTIVE ANALYTICS | 2-4 quarter hours
(Undergraduate)
This course is a follow up to the Foundations of Analytics course. Students will use a variety of tools to gain insights to problems by analyzing various data sets. Major topics include data visualizations, probability distributions, sampling, cross tabulations and pivot tables (including power pivots), correlation and causation, as well as applications of non-parametric statistics, such as chi-square, and Wilcoxon Signed Rank. Students are expected to be able to determine the appropriate analytical tools for different problems and draw inferences from their analysis, thus developing organizational intelligence to support decision-making. Pre-requisites: Foundations of Analytics and IT 223 Data Analysis. (2-4 quarter hours)

DA 320 | PREDICTIVE ANALYTICS | 2-4 quarter hours
(Undergraduate)
In this course, students will build decision models that predict outcomes based on various inputs and assumptions. Major topics include applications of regression analysis and forecasting, exponential smoothing, logistic regression, and Monte Carlo simulations. Students will be expected to have a good understanding of time series data to determine the appropriate models for different problems through sound reasoning, ask appropriate questions for decision-making, and critique the results. Pre-requisites: Foundations of Analytics and IT 223 Data Analysis. (2-4 quarter hours)

DA 330 | PRESCRIPTIVE ANALYTICS | 2-4 quarter hours
(Undergraduate)
In this third course on techniques in advanced analytics, students will build optimization models for optimal decision-making. These models are designed to provide specific courses of action. Major topics include linear, non-linear and integer programming. In addition, the course covers sensitivity analyses from the optimization models. The course is highly applied and uses a hands-on problem-based approach to problem solving. Pre-Requisites: Foundations of Analytics and IT 223 Data Analysis. (2-4 quarter hours)
DA 340 | ACCELERATING ORGANIZATION INTELLIGENCE: WHAT'S THE STORY? | 2 quarter hours
(Undergraduate)
This course focuses on developing the curiosity of students in decision analytics. Rather than verifying hypotheses, students will dig deeper to discover the right questions to ask and develop solutions. Having understood the emerging field of decision analytics and how analyzing Big Data can solve many current organization problems, this course adopts market-leading software to answer the preceding two questions. In this course, students will use this software to understand datasets, analyze datasets, visualize and share their findings. Through a series of problems, students will analyze a company's current position, identify problematic areas, develop insights for decision-making, develop compelling visuals and dashboards, build scenarios, and work collaboratively with companies (subject to availability). The hands-on approach enables students to build on existing knowledge on analytics to develop specific skills in using market-leading software. In addition, students will have the opportunity to use their own data for analysis in their focus areas. Pre-Requisite: Descriptive Analytics. (2-4 quarter hours)

DA 350 | QUALITATIVE ANALYTICS | 2-4 quarter hours
(Undergraduate)
While analytics often imply the use of predictive models, research problems do not always allow researchers to use quantitative methods. In this course, we look at problems that require a qualitative approach through an introduction to qualitative methods, hands on analysis of qualitative data, and discussion of ethics involved in empirical inquiry. (2-4 quarter hours)