Undergraduate Elective Courses

The teaching and research of the Data Sciences and Operations Department is composed of diverse disciplines: Operations Management, Statistics, and Digital Innovation. There are over 40 faculty members in the department who are very active in teaching, research and various professional organizations. Several of the department faculty have received research awards and honors, serve on editorial boards of major journals, and have won a range of teaching awards.

DSO 401 | Data Analysis with Spreadsheets
(2 Units, Fall and Spring)
This course is designed to provide students with an applied understanding of how “spreadsheet applications” are used to analyze business data. Students will receive hands-on experience in managing data, using Excel (like Microsoft Excel) for business information analysis in the areas of finance, information systems, marketing, and operations. This course will also enhance students’ understanding of the core business disciplines by providing them with the skills and experience to develop, test and analyze business cases, to increase the effectiveness in the corporate decision making process and to further develop a hands-on course and it is a must have course for internships and jobs.

DSO 427 | Spreadsheets Modeling for Business Insights
(4 Units, Spring)
Using MS Excel, we will learn to design spreadsheet models to solve managerial problems across diverse industries and functions. The course features structured frameworks to address uncertainty (Monte Carlo simulation and regression trees), minimize allocation (optimization), and financial modeling. In addition to spreadsheet modeling, students will learn industry expectations for quantitative analysis and practice the communication skills necessary to drive organizational change.

Managing World Class Operations, Data Analytics, and Digital Innovation

DSO 428 | Essentials and Digital Frontiers of Big Data
(4 Units, Spring)
An overview of key concepts of big data and related digital technologies and their applications to different business problems. Hands-on experience at introductory level.

DSO 431 | Digital Innovation as Competitive Advantage
(4 Units, Fall)
This course is designed for undergraduates interested in business careers in new areas like digital media and entertainment industry. Managing Digital Media includes the traditional entertainment and media industries as well as new players from the online world, mobile and Internet content service providers. The course will explore how new players are developing innovative business models to challenge the traditional media industries. We will focus on how the entertainment and media industry operate, and how, in the Internet, and mobile technologies are changing the economics and management of the entertainment and media industries. This course will employ lectures, case studies, guest speakers and entertainment and media industry professionals. The course will also include assignments that will enable students to think critically about the future of entertainment and media industries and make informed decisions about careers in the digital media industries.

DSO 443 | Designing Digital Processes and User Experiences
(4 Units, Irregular)
Gain skills to be a business or systems analyst as a career or part of management consulting by learning how to analyze business processes to identify improvement opportunities, develop use cases for information systems designed to support improved business processes, develop compelling business cases for convincing managers of the need for process change, become a liaison between technology and business, vendors and developers, and manage the change process to meet user and business needs (NO PREREQS).
DSO 459  |  Business Analytics with Python

This course introduces Python as a tool for solving business problems and making data-driven decisions. We develop computational thinking principles through real-world datasets on topics such as classification, data structures, conditional statements, loops, functions, and object-oriented programming. We also utilize the Pandas module to analyze and visualize data. Through labs and a team project, students gain exposure to real-world data in a wide variety of business domains, including retail, service, transportation, education, and the public sector.

DSO 462  |  Managing a Small Business on the Internet

Understanding the current and future uses of the internet for business is essential and empowering for any student. This introductory course is designed to give students a foundation in understanding the skills and tools that they will need to know when using the internet to manage small businesses. This course is open to all USC undergraduate students from all schools and all majors, and there are no prerequisites.

DSO 464  |  Deep Learning for AI and Business Applications

Artificial intelligence (AI) tools play an increasingly important role in modern business and big data applications including new AI-based startups. In particular, deep learning has become the driving force of several state-of-the-art developments that are reshaping and driving the business and industry. The course will benefit greatly students with strong interest in a future career or graduate program in Business Analytics or Data Science.

DSO 482  |  Supply Chain Management

This course focuses on management and improvement of supply chain processes and performance. It will be valuable for students who are interested in managing supply chain activities (e.g., procurement, transportation, operations, marketing or finance functions in a manufacturing or distribution firm). We explore important supply chain metrics, primary trade-offs in making supply chain decisions, and basic tools for effective and efficient supply chain management, production planning and inventory control, order fulfillment and supply chain coordination. We will also investigate topics such as global supply chain design, logistics, and outsourcing, several recent supply chain innovations. The content covers both quantitative and qualitative materials. Cases will feature high-tech companies as well as firms in more traditional industries such as apparel and manufacturing.

DSO 483  |  Operations Consulting

This course covers concepts, frameworks, analytical and managerial skills for leading and adding value in management consulting projects with a focus on operations. We will concentrate on operational issues and decisions including developing competitive advantage through operations, strategic planning, collaborative supply chain planning, and Six Sigma. The class format includes hands on student consulting projects with a well-known client companies, lectures, case discussions, and guest speakers.

DSO 499  |  Optimization with Analytics for Better Decision-Making

This course will teach students how to make effective decisions through optimization. They will learn how to translate a complex business problem into an optimization model by identifying appropriate decision variables, writing the objective function in terms of the decision variables and developing constraints that capture the business requirements. After solving the optimization model, you will learn how to interpret the solution and extract key business insights to provide recommendations for better decisions.

Undergraduate Areas of Interest for Electives

The DSO department offers classes that provide students with the skills to specialize in one or more areas of interest: 1) Business Analytics; 2) Business Model Innovations in Traditional and Digital Industries; 3) Project and Program Management, for project/program/product management consulting, for jobs with consulting firms in all industries; and 4) Supply Chain Management, for operations management and supply chain jobs in all industries. No prior technology background is expected in any of these classes. The intent is to help students gain exposure to real-world and techniques needed for a data-driven 21st century manager.

Department of Data Sciences and Operations
Marshall School of Business, Bridge Hall 308
http://www.marshall.usc.edu/dso

BUSINESS ANALYTICS: Students who plan to obtain a position as a data scientist will find courses in this area of study beneficial. These classes prepare you to have the essential analytic and business skills to analyze large data.

Essential Courses:
DSO 424: Business Forecasting
DSO 427: Spreadsheet Modeling for Business Insights
DSO 428: Essentials and Digital Frontiers of Big Data
DSO 431: Enterprise Data Architecture
DSO 459: Business Analytics with Python

Related Courses:
DSO 427: Spreadsheet Modeling for Business Insights
DSO 428: Essentials and Digital Frontiers of Big Data
DSO 431: Enterprise Data Architecture
DSO 443: Business Model Innovations in the Media Industries
DSO 455: Project Management
DSO 482: Supply Chain Management

SUPPLY CHAIN MANAGEMENT: For students who plan to work in management consulting, operations management, supply chain/manufacturing/demand/sales planning jobs in firm in all industries.

Essential Courses:
DSO 424: Business Forecasting
DSO 427: Spreadsheet Modeling for Business Insights
DSO 482: Supply Chain Management

Related Courses:
DSO 427: Spreadsheet Modeling with Spreadsheets
DSO 431: Digital Innovation as Competitive Advantage
DSO 433: Designing Digital Processes and User Experiences
DSO 435: Enterprise Data Architecture
DSO 443: Business Model Innovations in the Media Industries
DSO 455: Project Management
DSO 462: Managing a Small Business on the Internet