DS - Decision Sciences

Courses numbered 500 to 799 = *undergraduate/graduate*. (Individual courses may be limited to undergraduate students only.) Courses numbered 800 to 999 = *graduate*.

DS 690. Seminar in Selected Topics (1-5).
An umbrella course created to explore a variety of subtopics differentiated by letter (e.g., 690A, 690B). Not all subtopics are offered each semester – see the course schedule for availability. Students enroll in the lettered courses with specific topics in the titles rather than in this root course. Prerequisite(s): DS 350 with a grade of C+ (2.300) or better, junior standing, advanced standing.

DS 701. Introduction to Supply Chain Management (SCM) (0.5).
Enables students to understand the basics of integrated business logistics and supply chain management.

DS 702. Introduction to Spreadsheet Modeling (0.5).
Covers how to create spreadsheet models in Excel. Regardless of title (manager, supervisor, purchasing agent, etc.) and functional area (operations, supply chain, finance, etc.), students learn how to use Excel to summarize, report and analyze data — a critical set of skills in today's data-driven business environment.

DS 703. Introduction to Forecasting (0.5).
Predictive analytics is one of the three key parts of analytics (descriptive, predictive and prescriptive), and deals with forecasting. Course introduces students to time series analysis, and the averaging techniques of forecasting, including moving average, and exponential smoothing. Also introduces the metrics for error analysis in forecasting.

DS 704. Introduction to Inventory Management (0.5).
Overview of the concepts, tools and techniques used in managing inventory in a system.

DS 705. Basics of Analytics (1).
Covers basic methods for the analysis of existing datasets. Commonly used techniques for the analysis of quantitative and qualitative data are introduced. Topics include: data preprocessing, linear regression, logistic regression, classification, and cluster analysis. Students are introduced to R, an open source data mining software. Lectures use R and Microsoft Excel to guide the analysis, but students are welcome to use their preferred software package in solving assignment problems and evaluations.

DS 706. Introduction to Demand Management (1).
Focuses on fundamentals of demand management and introduces collaboration, consensus and integration issues of demand management. Includes strategies for managing uncertainty and the role of technology.

DS 707. Introduction to Supply Management (0.5).
Exposes learners to the latest trends and issues dealing with supply management. Covered topics include sourcing management, purchasing management, financial and operational strategies for procurement, supplier base management, and risks and sustainability in procurement.

DS 708. Advanced Forecasting (1).
Predictive analytics is one of the three key parts of analytics (descriptive, predictive, and prescriptive), and deals with forecasting. Course goes beyond the averaging techniques for forecasting, and covers linear regression for forecasting time series with trend, and the decomposition method for forecasting time series with trend and seasonality.

DS 709. Introduction to Project Management (0.5-1).
Establishes fundamental guidelines for defining the process of project management and designing time-constrained projects. Covers core methodology for managing complex projects on time.

DS 710. Supply Chain Management Network Planning (1).
Enables students to understand the basics of network planning in distribution networks, network design, global network design, and transportation network design.

DS 711. Performance Management in Supply Chains (1).
Performance management — a standard practice in organizations — is presented and promoted through business processes, methodologies, metrics and technologies used by an organization to measure, monitor and manage business performance. Covers a broad category of processes, technologies, applications and metrics for managing the performance of supply chains. Emphasizes the criticality of creating and maintaining an enterprise-level culture of evidence/fact-based management and decision making. Covers concepts and frameworks related to performance management in supply chains and exposes students to supporting technologies used by contemporary organizations.

DS 712. Advanced Demand Management (1).
Case-based course focusing on implications of demand management and elements of supply chain management in an effort to optimize revenue, inventory costs and customer service levels via promotional activities and intelligence.

DS 713. Integrated Supply and Demand Management (1).
Enables students to understand how integrated supply and demand management impacts design of an optimized supply chain.

DS 714. Strategic Management in Supply Chain Management (0.5).
Presents innovative strategies and best practices for strategically managing and optimizing supply chains to improve supply chain performance.

DS 715. Supply Chain Management A (0.5).
Uses simulation games to introduce different concepts in strategic supply chain management.

DS 716. Supply Chain Management B: Simulation Game (0.5).
Uses simulation games to discuss different concepts in strategic supply chain management.

DS 725. Global Procurement and Outsourcing (3).
Designed to expose learners to the latest supply chain trends and issues dealing with global purchasing and sourcing. Covered topics include global sourcing management, purchasing management, financial and operational strategies for sourcing and procurement, diversity in sourcing and procurement, supplier base management, risks in sourcing and procurement, ethical and sustainable outsourcing. Real-life experience and practices by guest speakers from area multi-national companies (Koch, Cargill, Spirit, Cessna and other aviation companies, etc.) are featured. *Course includes diversity content.*

DS 755. Project Management (3).
Cross-listed as MIS 755. This hands-on and project-based technology course establishes fundamental guidelines for defining the process of project management and designing time-constrained projects. Covers core methodology for managing complex projects on time. Uses a software tool. Prerequisite(s): junior standing, advanced standing; students are strongly recommended to take DS 350 before taking DS 755.

DS 760. ERP: Enterprise Resource Planning (3).
Cross-listed as BSAN 760. Provides students with an understanding of what Enterprise Resource Planning (ERP) systems are (also known as Enterprise Systems). ERPs are designed to assist an organization with integrating and managing its business processes by moving away from numerous disintegrated and costly legacy systems towards one main IT system for the organization. ERPs are a critical component of

an organization’s IT strategy because they integrate many functions in business including operations, supply chain, sales, distribution and accounting. The course provides a technical overview of ERP systems and their managerial impact on organizations. SAP is introduced to illustrate the concepts, fundamentals, framework, information technology context, technological infrastructure and integration of business enterprise-wide applications. Latest technological trends in the ERP market are discussed. Additional accompanying software is introduced, as time permits.

DS 790. Logistics and Warehouse Analytics (3).
Project-based course offers experimental logistics and warehouse decisions to challenging problems with global implications for an industry. Practical logistics strategies and analytic techniques are illustrated to facilitate strategic, tactical and operational decision making across supply chain functions, including but not limited to manufacturing, warehousing, transportation and inventory. Prerequisite(s): BSAN 775.

DS 825. Lean Practices in Supply Chain Management (3).
Uses articles, cases and best practices on how global companies in any industry deploy lean thinking and tools in order to achieve significant improvements in cost, lead times and quality. Aims to equip students with principles of lean thinking, value creation and streaming, lean implementation challenges involved in supply chain management, and lean tools for supply chains. Prerequisite(s): DS 865 or IME 783.

DS 850. Operations Management (3).
Develops an understanding of the operations function in a business and how it interfaces with other major functions in business. Students gain an appreciation of the strategic importance of operations and how a firm can gain competitive advantage through world-class performance by operations in delivering high-quality, cost-competitive products and services. Builds a knowledge base of the concepts, tools and techniques related to designing, managing and improving operations. Helps managers, regardless of functional specialization, gain an operations perspective. Prerequisite(s): calculus and statistics.

DS 865. Supply Chain Management (3).
Introduces concepts, models and solution approaches critical to managing a supply chain. Focuses on understanding how supply chain design and operation impact the performance of the company and its competitive advantage. Topics include strategy development, profitability, demand forecasting, inventory management, facility location, warehousing, transportation, network design and information sharing. Prerequisite(s): DS 850 or instructor’s consent.

DS 870. Risk Management in Global Supply Chains (3).
For a successful global company, risk management is an essential element. Course is designed to explore and outline the best practices in identifying, assessing and mitigating various risks stemming from the internal and external environments of a supply chain. Topics include risk management concept and process, risk management strategies, action based risk management framework, operational, tactical and strategic risk management, effect of risks on financial performances, and best industrial applications of risk management. Prerequisite(s): DS 865 and BSAN 775, or instructor's consent.

DS 883. Supply Chain Analytics (3).
Utilizes management science and data analytics on real life applications in designing and operating global supply chains, including but not limited to network design, transportation and logistics, management, forecasting, demand fulfillment, inventory management, and purchasing and supply management. It utilizes software packages such as Python, R, Tableau, GAMS and spreadsheet modeling. Prerequisite(s): DS 865, BSAN 775 and BSAN/ECON 710; or instructor's consent.

DS 890. Seminar in Special Topics (1-3).
An umbrella course created to explore a variety of subtopics differentiated by letter (e.g., 890A, 890B). Not all subtopics are offered each semester – see the course schedule for availability. Students enroll in the lettered courses with specific topics in the titles rather than in this root course.

DS 890S. Integrated Supply Management (3).
Prepares professionals and students to take the most recognized supply management certification CPSM – Certified Professional in Supply Management. In this case and scenario based course, learners are exposed to major competencies including but not limited to global sourcing management, negotiation, legal and contractual obligations, supplier relationship management, cost and price management, financial and operational strategies for sourcing and procurement, quality management, diversity in sourcing and procurement, risks in sourcing and procurement, corporate social responsibility, project management, and leadership and business acumen.

DS 890X. Data Visualization (0.5).
Introduces data visualization. Visualizations are graphical depictions of data that can improve understanding, sharing and decision making. Students are exposed to information on selecting appropriate display methods for different data types to improve communication and sharing. Students learn various design and visualization approaches that enhance comprehension of data and aid in effective decision making.

DS 891. Directed Studies (1-5).
Arranged individual directed study in specialized content areas under the supervision of a faculty member. Repeatable for up to 6 credit hours. Prerequisite(s): departmental consent.

DS 892. Internship (1-3).
Designed for students to have practical experience in supply chain management and analytics field and provide the opportunity to apply the tools and techniques learned in classrooms, under supervision of an employer of a company approved by the director for the supply chain graduate programs. Evaluation of the work done is evaluated by both the employer and the director or coordinator. Repeatable for a total of 3 credit hours. Prerequisite(s): 3.000 GPA, graduate standing in management science and supply chain management, advisor consent.

DS 896. Master's Directed Project (1-3).
Arranged individual directed project in specialized content areas under the supervision of a faculty member. Open to students enrolled in the master's program in management science and supply chain management who have chosen the project option. Prerequisite(s): academic advisor's consent.

DS 897. Master's Thesis (1-6).
Student-driven research experience to address a specific research question. Potential topics should be formulated by the student and discussed with their advisor. Open to students enrolled in the master's program in management science and supply chain management who have chosen the thesis option. Repeatable for credit. Prerequisite(s): thesis advisor's consent.