

MANAGEMENT SCIENCE (MS)

Management Science (MS) Courses

MS 5003. Quantitative Methods for Business Analysis. (3-0) 3 Credit Hours.

This is an introductory course in business data analytics as it applies to managerial decision-making. Topics include, but are not limited to, exploratory data analysis, probability and probability distributions, inferential statistics, chi-square tests, analysis of variance, simple and multiple linear regression, time series data analysis, and forecasting. Computer software is used to illustrate all data analytics techniques. This course has Differential Tuition.

MS 5013. Data Analytics for Managers. (3-0) 3 Credit Hours.

This course provides fundamental statistical data analytics skills for managers who are likely to encounter business challenges that require the application of statistical techniques. Topics covered include a review of statistical principles, the logic of hypothesis testing, and the role of assumptions in statistical analysis. Several statistical techniques will be covered including chi-square tests, analysis of variance (ANOVA) including multiple group comparison tests, correlation, multiple regression including dummy variable regression, time series concepts such as stationarity, and techniques including but not limited to ARIMA models and forecasting. Statistical computer software will be utilized to provide hands-on experience in analyzing data related to real-world business challenges. Emphasis will be placed upon determining the appropriate statistical technique for the problem at hand as well as the correct interpretation of results produced by the statistical tests covered. This course has Differential Tuition.

MS 5023. Decision Analytics for Managers. (3-0) 3 Credit Hours.

Prerequisite: MS 5013 or an equivalent or consent of instructor. This course is a study of the applications of decision analytics techniques used in managerial decision-making. Topics include, but are not limited to, linear programming, distribution network models, project scheduling, inventory management, waiting line models, simulation, decision analysis, and Markov processes. Students will develop spreadsheet models that enable these techniques to utilize the data available to them and apply the results to business decisions. (Formerly titled "Decision Analysis and Production Management".) This course has Differential Tuition.

MS 5323. Statistical Methods for Business Analytics. (3-0) 3 Credit Hours.

Prerequisite: MS 5013 or an equivalent. Introduction to multivariate statistical analysis. Typical topics include multiple regression, multiple analysis of variance, logistic regression, discriminant analysis, conjoint analysis, cluster analysis, and factor analysis. Emphasizes the use of computer statistical packages. This course has Differential Tuition.

MS 5333. Introduction to Business Analytics. (3-0) 3 Credit Hours.

This course introduces the basic concepts of business analytics, principles of data mining, Structured Query Language (SQL), and Big Data. It provides students an opportunity to understand how analytics can help improve decisions throughout an organization's value chain. Presents the most prevalent methods for descriptive (e.g., cluster analysis, association analysis), predictive (e.g., multiple regression, logistic regression, decision tree methods), and prescriptive (e.g., optimization) analytics. This course has Differential Tuition.

MS 5343. Logistics Systems Management. (3-0) 3 Credit Hours.

Study of business logistics: the process of planning, implementing, and controlling the flow and storage of goods or services and related information from point of origin to point of consumption to achieve customer satisfaction. Focuses on the cost and value added to products or services by making them available in the desired condition when and where they are needed. This course has Differential Tuition.

MS 5363. Pricing and Revenue Management. (3-0) 3 Credit Hours.

Revenue Management is about "providing the right product to the right customers at the right time at the right price." The main goal of this course is to apply revenue management practices to appropriate industries successfully. Specifically, the course will provide tools to forecast customer demand successfully, identify pricing and revenue opportunities, understand the impact of constrained capacity, opportunity costs, customer response, demand uncertainty and market segmentation on pricing decisions, and accordingly formulate and solve pricing optimization problems for revenue maximization. The material covered in the course assumes a basic understanding of probability and probability distributions, some knowledge of spreadsheet modeling, and using Excel Solver or similar optimization tools to get a solution. This course has Differential Tuition.

MS 5383. Supply Chain Analytics. (3-0) 3 Credit Hours.

The main goal of this course is to integrate data analytics with supply chain management. The course will introduce data-driven models, skills, and tools for learners to manage supply chains efficiently and effectively. Specifically, the course will provide an overview of supply chain intelligence and analytics applied in the global marketplace through real-world examples and case studies, and help develop critical thinking skills in support of competition and collaboration strategies in supply chain management. Students learn to define the right data set, ask the right set of questions to drive supply chain efficiency and business value, and use the appropriate models and tools to develop data-driven decisions. This course has Differential Tuition.

MS 5393. Advanced Production and Operations Management. (3-0) 3 Credit Hours.

Operations management as a basic function that must be performed in all business firms involves managing the activities and resources necessary to make products and/or provide services. It can be an effective competitive weapon to penetrate into markets worldwide. The course is designed to address the key operations issues in manufacturing and service organizations that have strategic as well as tactical implications. We review the methods required for design, operation, and improvements of the systems that create products or services. Topics covered include Product/Service Design, Process Strategy and Analysis, Quality and Performance, Capacity Planning & Constraint Management, Inventory Management, Forecasting, Operations Planning & Scheduling, and Resource Planning, etc. This course has Differential Tuition.

MS 5413. Integrated Global Supply Chain Management. (3-0) 3 Credit Hours.

Focuses on effective supply chain strategies for organizations that operate globally with emphasis on how to plan and integrate supply chain components into a coordinated system. Specifically, the course seeks to integrate different perspectives from the practices of marketing, logistics, and operations management. The course will introduce key tactics such as risk pooling and inventory placement, integrated planning, and information sharing. One of the key objectives is to understand the relationship between a focal firm and its suppliers and customers. This course has Differential Tuition.

MS 5423. Service Management and Operations. (3-0) 3 Credit Hours.

Focuses on understanding the variety of service industries (both profit and nonprofit) and the growing importance of the service industry to the economy. In addition to the traditional topics of quality, customer satisfaction and value creation, topics include service encounters, service design and development, service productivity, and globalization of services. Tools and techniques for management service operations are also emphasized. This course has Differential Tuition.

MS 5433. Effective Project Management. (3-0) 3 Credit Hours.

Approaches project management from the perspective that the material is applicable to all disciplines and project types. It not only emphasizes individual project execution, but also provides a strategic perspective. It integrates the critical PMBoK elements in the context of cases and projects. The course examines the traditional concepts and techniques of project management for long-term development programs and short-term projects as well as introducing the innovative adaptive and extreme concepts. This course has Differential Tuition.

MS 5453. Management and Control of Quality. (3-0) 3 Credit Hours.

An examination of the fundamental nature of quality assurance, its strategic importance in business and industry, and the economic impact of quality. Theoretical and management issues relating to quality problem solving are emphasized. The contribution of the leaders in modern quality management are discussed. This course has Differential Tuition.

MS 5463. Lean Operations and Six Sigma. (3-0) 3 Credit Hours.

Course provides an introduction to Six Sigma methodologies and is designed to present the fundamentals of Six Sigma and instill an understanding of what is required to build a sustainable Six Sigma structure. Lean tools, such as physical maps, time value, and Kanban are included as well as advanced Six Sigma statistical tools. This course has Differential Tuition.

MS 5493. Procurement and Inventory Management. (3-0) 3 Credit Hours.

A portion of this course focuses on the key issues related to the strategic implications of sourcing of products, the purchasing of goods and services, and the role of purchasing in a supply chain context. It provides students with an understanding of purchasing processes, issues, and best practices. Emphasis areas include supplier quality, relationship management, and global sourcing. Inventory control concepts, techniques, and strategies for effective integration with basic finance, marketing, and manufacturing objectives are topics covered in this course. Models for dependent and independent demand inventory systems, material requirements planning systems, distribution requirements, planning techniques, and the classical reorder point inventory model are also included. This course has Differential Tuition.

MS 6943. Management Science Internship. (0-0) 3 Credit Hours.

Prerequisite: Graduate standing, 15 semester credit hours of graduate work, and consent of instructor. Internship must be approved in advance by the Internship Coordinator and the student's Graduate Advisor of Record. Supervised full- or part-time off-campus work experience and training in management science. Individual conferences and written reports required. This course has Differential Tuition.

MS 6953. Independent Study. (0-0) 3 Credit Hours.

Prerequisites: Graduate standing and permission in writing (form available) of the instructor and the student's Graduate Advisor of Record. Independent reading, research, discussion, and/or writing under the direction of a faculty member. For students needing specialized work not normally or not often available as part of the regular course offerings. May be repeated for credit, but not more than 6 hours, regardless of discipline, will apply to the degree. Differential Tuition: \$387.

MS 6971. Special Problems. (1-0) 1 Credit Hour.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Problems courses may be repeated for credit when topics vary, but not more than 6 hours, regardless of discipline, will apply to the degree. This course has Differential Tuition.

MS 6973. Special Problems. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. An organized course offering the opportunity for specialized study not normally or not often available as part of the regular course offerings. Special Problems courses may be repeated for credit when topics vary, but not more than 6 hours, regardless of discipline, will apply to the degree. This course has Differential Tuition.

MS 6983. Master's Thesis. (0-0) 3 Credit Hours.

Prerequisite: Permission of the Graduate Advisor of Record and thesis director. Thesis research and preparation. May be repeated for credit, but not more than 6 hours will apply to the Master's degree. Credit will be awarded upon completion of the thesis. Enrollment is required each term in which the thesis is in progress. This course has Differential Tuition.

MS 7033. Applications in Causal Structural Modeling. (3-0) 3 Credit Hours.

Prerequisite: Consent of instructor. The purpose of this course is to provide students with an overview of structural equation modeling (SEM) procedures, which includes, but not limited to, issues related to measurement evaluation, model selection and specification, model estimation, and model fit. An additional aim of this course is to provide students with the computer skills needed to analyze and interpret their data, especially as it related to factor analysis, path analysis, and SEM. This course also addresses supplemental topics commonly encouraged in SEM and applied research (sample size and power, missing data, non-normal data, order categorical data, etc.). This course has Differential Tuition.