MANAGEMENT SCIENCE (MGSC)

MGSC 290 - Computer Information Systems in Business (3 Credits)
An introduction to the effective use of information systems tools in day-to-day business communications, analysis, and decision making.

MGSC 291 - Applied Statistics for Business (3 Credits)
Descriptive statistics, topics in probability, statistical inference and modeling. Emphasis on the collection, summarization, analysis, and reporting of numerical findings relevant to business decisions and economic analysis.
Prerequisites: STAT 206.

MGSC 298 - Program Design and Development (3 Credits)
Fundamental algorithms and processes used in business information systems. Development and representation of programming logic. Introduction to implementation using a high-level programming language.
Cross-listed course: CSCE 104, ITEC 104

MGSC 390 - Business Information Systems (3 Credits)
Introduction to the planning, development, and management of Business Information Systems (BIS) and related information technologies in organizations. Topics include hardware, software, database, telecommunications, and the Internet.
Prerequisites: MGSC 290 or equivalent.

MGSC 391 - Applied Statistical Modeling (3 Credits)
Multiple regression, ANOVA, forecasting, quality control, and nonparametric techniques. Emphasis is on the application of these statistical models in business decision making.
Prerequisites: C or better in MGSC 291.

MGSC 392 - Quantitative Analysis for Business Decision Making (3 Credits)
Quantitative approaches for managerial problem solving and decision making. Formulation, solution, analysis, and interpretation of spreadsheet-based models for common business decision-making situations. Optimization, simulation, decision analysis.
Prerequisites: MGSC 291.

MGSC 393 - Advanced Management Science (3 Credits)
Advanced topics in management science; stochastic models, nonlinear programming, dynamic programming, Markov processes, and multiple criteria decision models.
Prerequisites: MGSC 392.

MGSC 394 - Data Analytics for Business (3 Credits)
Extracting, transforming, visualizing, and analyzing data to support business intelligence and decision making. Business analytics, relational database management, principles and applications of data visualization.
Prerequisites: C or better in MGSC 290 and MGSC 291.

MGSC 395 - Operations Management (3 Credits)
Management of activities/resources that result in the production of competitive goods and services in the global market place. Integrates cross-functional concepts from marketing, finance, and management.
Prerequisites: C or better in STAT 206.

MGSC 398 - Applied Problem Solving and Programming (3 Credits)
Systematic problem definition, solution formulation, and computer implementation for business and related areas. Internet and database applications. Programming exercises in a high-level programming language.
Prerequisites: CSCE 104 or MGSC 298.

Cross-listed course: CSCE 304

MGSC 405 - International Information Systems (3 Credits)
An examination of the challenges and opportunities associated with the development, management, and use of global information systems.
Cross-listed course: IBUS 405
Graduation with Leadership Distinction: GLD: Global Learning

MGSC 450 - Special Topics in Management Science (1-3 Credits)
Current topics, issues and practices in various areas of Management Science. Course may be repeated up to three (3) times as content varies by title.
Prerequisites: C or better in MGSC 395.

MGSC 485 - Business Process Management (3 Credits)
Course entails learning and applying cutting-edge concepts and techniques of business process analyses to process improvement initiatives such as reengineering, lean, and six-sigma.
Prerequisites: MGSC 395.

MGSC 486 - Service Operations Management (3 Credits)
Course focuses on the management of service operations, with considerable attention paid to cutting-edge quantitative techniques. Topics covered include facility location, waiting line management, and revenue management, among others.
Prerequisites: C or better in MGSC 291 and MGSC 395.

MGSC 487 - Global Sourcing Strategies and Application (3 Credits)
Course covers skills necessary to pursue sourcing-related careers in manufacturing, services, retailing, and government agencies, including discussion of cutting-edge negotiation and global sourcing strategies pursued in exemplar firms.
Prerequisites: MGSC 395.

Graduation with Leadership Distinction: GLD: Global Learning

MGSC 488 - Innovation and Design (3 Credits)
Creation and launch of viable businesses using innovation tournaments. Development of problem solving and design skills. Application to real innovation and entrepreneurial hurdles.
Prerequisites: C or better in MGSC 395.

MGSC 489 - Sustainable Operations & Supply Chain (3 Credits)
This course explores how operations managers can analyze and make decisions regarding the interaction of operations activities on the environment. Students will learn various tools to enable better decision making within the sustainable operations realm.
Prerequisites: C or better in MGSC 395.

MGSC 490 - Information Systems Analysis and Design (3 Credits)
Analysis and design of business information systems using modern tools, techniques, and methodologies.
Prerequisites: MGSC 394 or CSCE 145, and MGSC 390.

Graduation with Leadership Distinction: GLD: Research

MGSC 491 - Supply Chain Management (3 Credits)
This course examines principles governing an integrated supply chain that includes the cross-functional processes of sourcing, inventory management, and logistics. Key tools for managing supply chains will also be discussed.
Prerequisites: C or better in MGSC 395.

MGSC 492 - Logistics, Transportation and Distribution (3 Credits)
This course is designed to provide a body of knowledge, technical know-how, and standards for those in the logistics, transportation and distribution industries.
Prerequisites: C or better in MGSC 395.

MGSC 494 - Business Telecommunications (3 Credits)
Identifies and explains the principal technologies, concepts, and techniques currently applied in the business data communications field. Current and future hardware and software technologies, networking, protocols, and the OSI Model are covered.
Prerequisites: MGSC 390.

MGSC 495 - Supply Chain Planning and Execution (4 Credits)
Managing the flow of materials from suppliers to customers; supply chain concepts, terminology, and relationships; processes used to develop operations plans.
Prerequisites: MGSC 395.

MGSC 497 - OSC Capstone Project (4 Credits)
Course entails executing projects that apply OSC concepts to solve significant operational or supply-chain problems at simulated or actual firms. Teams write recommendation reports and oversee sourcing strategies pursued in exemplar firms.
Prerequisites: C or better in MGSC 485 and permission of instructor based on competitive application.

Graduation with Leadership Distinction: GLD: Community Service, GLD: Research
Experiential Learning: Experiential Learning Opportunity

MGSC 498 - Project Management for Business (3 Credits)
An introduction to the qualitative and quantitative approaches to the management of projects as well as a review MS Project software.

MGSC 520 - Forecasting and Time Series (3 Credits)
Time series analysis and forecasting using the multiple regression and Box-Jenkins approaches.
Prerequisites: C or better in STAT 516 or MGSC 391.

Cross-listed course: STAT 520

MGSC 525 - Statistical Quality Control (3 Credits)
Statistical procedures for process control including CUSUM and Shewhart Control Charts, and lot acceptance sampling.
Prerequisites: MGSC 291 or STAT 509 or STAT 515.

Cross-listed course: STAT 525

MGSC 590 - E-Commerce Concepts and Research Topics (3 Credits)
Social, technological, commercial, marketing, and political implications of current and impending tends in E-Commerce.
Prerequisites: MGSC 390.

MGSC 591 - Simulation of Business Systems (3 Credits)
Theory and design of business simulation experiments, development and use of computer simulation models, and analysis of data generated by computer simulation experiments.
Prerequisites: MGSC 291.

MGSC 592 - Analysis of Decisions Under Uncertainty (3 Credits)
Theory and practice of making decisions in an environment of uncertainty; development of skill in the assessment of preferences and probability distributions.
Prerequisites: MGSC 291.

MGSC 594 - Strategic Management of Information Systems (3 Credits)
Strategic management and use of information systems in organizations.
Cross-listed course: CSCE 594

MGSC 596 - Database Management for Business (3 Credits)
Technology overview and principles of database design for business applications. Enterprise database administration and planning. Design exercises and projects using the latest database management systems software.

MGSC 690 - Quantitative Foundations for Business and Economics I (3 Credits)
Calculus and classical optimization methods applied to problems in business and economic analysis; matrices, derivatives, and integrals in the analysis of both univariate and multivariate business and economic models.

MGSC 691 - Quantitative Foundations for Business and Economics II (3 Credits)
Statistics and probability theory applied to problems of business and economic analysis.
Prerequisites: MGSC 690 or ECON 690.

MGSC 692 - Quantitative Methods I (3 Credits)
Probability and statistics necessary for graduate study in economics and business administration; estimation, hypothesis testing, regression, analysis of variance, and nonparametric methods.

MGSC 694 - Quantitative Methods II (3 Credits)
Decision models useful in business and economics; linear programming, sensitivity analysis and duality, network models, integer programming, dynamic programming, inventory and queuing, and simulation.
Prerequisites: MGSC 692 or equivalent.