

Operations Management (O M)

O M 119S, 219S, 319S, 419S, 519S, 619S, 719S, 819S, 919S Topics in Operations Management 1-9 Hours

This course is used to record credit the student earns while enrolled at another institution in a program administered by the University's Study Abroad Office. Credit is recorded as assigned by the study abroad adviser in the Department of Information, Risk, and Operations Management. University credit is awarded for work in an exchange program; it may be counted as coursework taken in residence. Transfer credit is awarded for work in an affiliated studies program.

O M 320F Foundations of Operations and Supply Chain Management 3 Hours

O M 129S, 229S, 329S, 429S, 529S, 629S, 729S, 829S, 929S Topics in Operations Management 1-9 Hours

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O M 332F Topics in Foundations of Operations Management 3 Hours

O M 334M Healthcare Operations Management 3 Hours

Overview of healthcare operations management. Focus on process diagramming, vocabulary, and analysis of effects of variability on healthcare operations in terms of increasing waiting lines, inventory, and patient safety issues. Focus on modern process improvement methodologies.

O M 135, 235, 335 Operations Management 1-3 Hours

The operations or production function and the skills required for analyzing and solving related problems.

O M 235H, 335H Operations Management: Honors 2-3 Hours

An investigation of the operations or production function, and the skills required for analyzing and solving related problems.

O M 338 Supply Chain Modeling and Optimization 3 Hours

Framing, formulating, and applying quantitative optimization and descriptive models to support supply chain and operations management decisions, using spreadsheets and other software. Requires familiarity with spreadsheets.

O M 140S, 240S, 340S, 440S, 540S, 640S, 740S, 840S, 940S Topics in Operations Management 1-9 Hours

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O M 350 Digital Transformation of Supply Chain Management 3 Hours

Study strategic frameworks for facilitating the digital transformation of supply chains and operations management to align with a firm's business model. Explore the tactical deployment of digital capabilities and the use of data analytics to transform operational processes to improve efficiency, quality, and timing.

O M 360 Procurement and Supplier Management 3 Hours

Explore strategic issues in procurement and supplier management; a review of competitive analysis and benchmarking; the purchasing role in fulfilling a firm's operational and competitive strategies; supplier evaluation, development, and relationship management; negotiating with suppliers for results; and commodity planning.

O M 366P Operations Management Practicum 3 Hours

Students apply skills in their major area and focus on additional project management skills through group projects conducted in a professional setting. Students may work with a private or a public enterprise.

O M 370 Supply Chain Design, Planning, and Execution 3 Hours

Analyze the entire flow of information, materials, and services from suppliers through factories and warehouses to the end customer. Examine logistics, supplier selection, and inventory management using case studies, optimization, and simulation.

O M 171T Topics in Operations Management 1 Hour

O M 372T Topics in Operations Management 3 Hours

O M 372T.1 Total Quality Management 3 Hours

O M 372T.12 Information Technology for Supply Chains 3 Hours

Learn how information technology is used to coordinate supply chain activities across different industries.

O M 372T.17 Health Care Analytics 3 Hours

Explore key management challenges and how data may be leveraged to guide decisions and improve operations, with the unifying theme of providing health care services in a manner that leads to lower cost and higher quality.

O M 372T.2 Sustainable Operations 3 Hours

O M 372T.20 Supply Chain Analytics 3 Hours

Study dynamic demand forecasting models based on both data aggregation as well as hierarchical aggregation of point-of-sale predictive analytics. Explore the use of developed predictive dynamic models for operations planning and operations decision making.

O M 372T.21 Time Series Forecasting 3 Hours

Examine statistical forecasting methods used in business. Discuss Box-Jenkins models; exponential smoothing models; ARCH/GARCH models for varying volatility in financial returns; seasonal adjustment of time series; tests for nonstationary of time series; and modeling multiple time series.

O M 372T.24 Data-Driven Revenue Management 3 Hours

Use data-driven tactics and strategies to predict consumer demand and optimize price and capacity/inventory availability to maximize revenue or profit. Explore demand analytics and revenue management techniques, produce rigorous and practical insights, and develop data analysis and optimization skills, based on business cases, datasets, and exercises. Examine diverse contexts and industries, such as conventional retailing, e-commerce, airline/hotel, and contemporary platform and cloud services (e.g., Uber, Dropbox, Netflix, AWS), by utilizing software (Excel, R, or Python) to build models, conduct optimization, and develop insights for a variety of revenue management examples.

O M 372T.5 Project Management 3 Hours

O M 372T.7 New Product Development 3 Hours

Examine the integration of supply chain management into the product design and development process. Learn skills and knowledge involving product development and incorporating supply chain considerations with an emphasis on designing products that optimize the supply chain while maintaining the products vision from concept to customer.

O M 375 Supply Chain and Operations Management Strategy 3 Hours
Discuss the role of supply chain management to increase a firm's competitive performance and understand how that performance affects the economy and society as a whole. Examine supply chain and operations design as well as environmental, social, and governance (ESG) issues. Explore the impact of new business models including e-commerce and automation; contracting; outsourcing and vertical integration, resiliency; and new delivery modalities.

O M 179, 379 Independent Research in Operations Management 1,3 Hours

O M 380 Topics in Seminar in Operations Management 3 Hours

O M 380.1 Combinatorial Optimization 3 Hours
Concepts of computational complexity; the foundation of discrete mathematics and combinatorial theory.

O M 380.10 Queueing Systems 3 Hours
Deterministic queues, priorities, random walks, networks, approximations, and applications.

O M 380.11 Graduate Seminars 3 Hours

O M 380.12 Logistics 3 Hours
Tools and concepts for the management of the flow of information, material, product, and cash between the initial suppliers of raw material and the ultimate consumers of finished goods.

O M 380.13 Management Planning and Control of Complex Systems 3 Hours
Designed to provide guidance to doctoral students interested in research on new approaches to management planning and control of complex systems, and to MBA students interested in evaluating new practices currently being used in management planning and control activities.

O M 380.15 Optimization I 3 Hours
Introduction to operations research and optimization, including linear programming, network models, deterministic dynamic programming, decisions under uncertainty, game theory, inventory models, and simulation. Emphasis on mathematical programming models and algorithmic approach of operations research problems.

O M 380.16 Optimization II 3 Hours
Designed to provide students, especially those involved in research, with more advanced optimization tools in several broad areas. Includes nonlinear programming, graph theory, integer programming, Markov chains, probabilistic dynamic programming, queueing theory, and metaheuristics. Emphasis on mathematical programming modeling and algorithmic approach of operations research problems.

O M 380.17 Supply Chain Analytics 3 Hours
Supply chain analytics combines analytical tools with technology to identify trends, compare performance and highlight improvement opportunities in supply chain areas including sourcing, inventory management, manufacturing, quality, sales and logistics.

O M 380.2 Linear Programming 3 Hours
Model formulation: solution algorithms; duality theory; decomposition; sparse matrix issues; sensitivity and parametric analysis; optimization and matrix generation computer software.

O M 380.4 Algorithms and Implementations 3 Hours
Design, analysis, implementation, and use of computer algorithms. Introduction to fundamental data structures, sorting, recursive programs, dynamic data structures, memory management, algorithm design techniques and complexity analysis, and applications in optimization problems. Examples from linear and integer programming, covering, knapsack, graph-theoretic problems, network analysis, and scheduling.

O M 380.5 Business Process Simulation 3 Hours
Modeling with simulation languages; random number generation; statistical analysis of input and output; variance reduction techniques; computer software applications.

O M 380.6 Integer Programming 3 Hours
Mathematical programming models with discrete (integer) decision alternatives. Model formulation and solution algorithms.

O M 380.7 Nonlinear Programming 3 Hours
Optimization of nonlinear functions of many variables subject to linear or nonlinear constraints. Basic theory, solution algorithms, applications, computer software.

O M 380.8 Large-Scale System Optimization 3 Hours
Formulation and solution of large mathematical optimization models. Focus on algorithms that exploit special structure of linear and nonlinear programming models. Applications.

O M 380.9 Stochastic Processes 3 Hours
Discrete stochastic systems, queueing processes, inventory models, replacement, renewal theory, Markovian processes.

O M 184, 284, 384 Topics in Business Analytics 1-3 Hours
Selected topics in business analytics.

O M 186, 286, 386 Current Topics in Operations Management 1-3 Hours
Strategic problems, policies, models, and concepts for the design and control of new or existing operations systems.

O M 186.1, 286.1, 386.1 Service Management 1-3 Hours

O M 186.10, 286.10, 386.10 Sustainable Operations 1-3 Hours
Discuss how the operations of creating value can be better managed to address the challenges of environmental sustainability. Learn about the trade-offs and challenges associated with measuring and reporting emissions, extended producer responsibility, closed-loop supply chains, and business model innovations. Develop critical thinking skills by learning economic theory related to environmental sustainability.

O M 186.11, 286.11, 386.11 Operations Bootcamp 1-3 Hours
Explore real-world operations challenges through intensive, team-based case work with industry collaborators. Investigate problems such as supply chain disruptions, production planning, and service delivery improvements across multiple sectors. Design and present research-driven solutions to practitioners for review and discussion while strengthening analytical, problem-solving, and presentation skills in an operations context.

O M 186.2, 286.2, 386.2 Supply Chain and Operations Strategy 1-3 Hours

O M 186.3, 286.3, 386.3 Strategic Quality Management 1-3 Hours

O M 186.4, 286.4, 386.4 Operations Practicum 1-3 Hours

O M 186.5, 286.5, 386.5 Managing Projects 1-3 Hours

O M 186.6, 286.6, 386.6 Decision-Support Modeling 1-3 Hours
Operations research and modeling to assist in decision making through building data models and operations research software systems.

O M 186.7, 286.7, 386.7 Data Driven Health Care Operations 1-3 Hours
Explore operational challenges arising in outpatient clinics, hospitals, and drug development and production. Examine a combination of business cases and representative data sets. Utilize R as a supporting tool.

O M 186.8, 286.8, 386.8 Healthcare Analytics 1-3 Hours

O M 186.9, 286.9, 386.9 Supply Chain Management 1-3 Hours

Learn how to use analytical tools and conceptual frameworks to make decisions in supply chain contexts. Develop insights about major strategic issues and trade-offs that arise in supply chain management. Collaborate with others in simulated supply chain decision making environments.

O M 392 Topics in Seminar: Operations Management 3 Hours

Intensive analysis of operations management issues.

O M 392.1 Operations Management Colloquium 3 Hours

O M 392.2 Network Optimization 3 Hours

Focus on theory, algorithms, and applications of network optimization with emphasis on supply chain operations and applications. Optimize the routing of flows on networks, discover the special structure and properties of network flow problems, and design effective solution methods that exploit these properties.