

Management Science/Operations Management (MSOM)

Courses

MSOM 5001. Operations Management. 1 to 3 Credit Hour.

The "operations" function is the core of any organization, where inputs such as labor and technology are converted into goods and services. The course provides a survey of several diverse operations topics that are central to both the manufacturing and service sectors of the economy, such as forecasting, inventory control, quality management, production planning, and supply chain management. The emphasis of the course is to apply quantitative models to effectively design and control these operational systems. Software is extensively used to support the operations analysis.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites:

STAT 5001|Minimum Grade of B-|May not be taken concurrently
OR (MIS 5401|Minimum Grade of B-|May not be taken concurrently
AND STAT 5401|Minimum Grade of B-|May not be taken concurrently)
OR (MIS 5301|Minimum Grade of B-|May not be taken concurrently
AND STAT 5301|Minimum Grade of B-|May not be taken concurrently)

MSOM 5107. Lean, Six Sigma, and the Science of Improvement. 3 Credit Hours.

This course provides an outstanding opportunity to learn the basic concepts of improvement science and offers exposure to key tools used in the science and art of improvement. The tools of quality and improvement science are explored, and the student has an opportunity to practice with the tools.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

MSOM 5108. Project Management. 3 Credit Hours.

This course follows a life-cycle approach to managing projects, beginning with project initiation concerns and ending with project termination. Project planning and scheduling are given the most emphasis, making use of the PERT and CPM approaches. A course project is required.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

MSOM 5111. Optimization Methods. 3 Credit Hours.

This course covers optimization models, methods, and software applied to solve business problems focusing on models and methods used in computational finance, ranging from asset allocation to risk management, from option pricing to model calibration. Students gain an understanding of linear, quadratic, integer, dynamic, and stochastic programming methods and the tools for implementing these models in practice.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

MSOM 5156. Logistics and Supply Chain Management: Tools, Strategy, and e-Business Issues. 3 Credit Hours.

One objective of this course is to apprise students of the e-impact on supply chain management (SCM) and, conversely, on how SCM is growing more important as more organizations embrace e-business. The overarching objective, though, is that through this introduction to and survey of the field, students learn what today's issues in logistics and SCM are and how they are treated. That is, the students are expected not only to grasp what typical logistics and SCM problem areas are, but also to become familiar and competent with some of the analysis tools that managers use to address these problems. This course will be taught online.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

MSOM 5170. Special Topics. 1 to 6 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

MSOM 5175. Multi-Criteria Decision Analysis. 3 Credit Hours.

Decision-making processes and techniques emphasize that solving problems often entail conflicting criteria. Approaches to incorporating and resolving this conflict are presented.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

MSOM 5182. Independent Study. 1 to 6 Credit Hour.

Special study in a particular aspect of operations research, under direct supervision of a graduate faculty member. No more than six semester hours of independent study may be counted toward degree requirements.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

MSOM 5190. Special Topics - MSOM. 1 to 6 Credit Hour.

Content varies by semester.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

MSOM 5282. Independent Study. 1 to 3 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

MSOM 5301. Project Management and Capacity Planning. 1.5 Credit Hour.

Managing operations is a critical and integral concern for any organization. Essentially, operations comprises the functional areas of an organization that convert inputs into goods and services. This course will examine the efficient design and control of these activities. Much of the analysis that we carry out involves mathematical modeling and solution of the problems typically encountered across a wide range of service and manufacturing firms. The course will also include techniques for effective project management - techniques that can be immediately applied to the marketing and consulting challenges.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

College Restrictions: Must be enrolled in one of the following Colleges: Business & Mngmnt, Fox School.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites:

STAT 5301|Minimum Grade of B-|May not be taken concurrently
OR STAT 5401|Minimum Grade of B-|May not be taken concurrently
OR STAT 5001|Minimum Grade of B-|May not be taken concurrently.

MSOM 5401. Project Management and Capacity Planning. 1.5 Credit Hour.

Managing operations is a critical and integral concern for any organization. Essentially, operations comprises the functional areas of an organization that convert inputs into goods and services. This course will examine the efficient design and control of these activities. Much of the analysis that we carry out involves mathematical modeling and solution of the problems typically encountered across a wide range of service and manufacturing firms. The course will also include techniques for effective project management - techniques that can be immediately applied to the marketing and consulting challenges.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

College Restrictions: Must be enrolled in one of the following Colleges: Business & Mngmnt, Fox School.

Repeatability: This course may not be repeated for additional credits.

Pre-requisites:

STAT 5301|Minimum Grade of B-|May not be taken concurrently
OR STAT 5401|Minimum Grade of B-|May not be taken concurrently
OR STAT 5001|Minimum Grade of B-|May not be taken concurrently.

MSOM 5806. Managing Operations in the Enterprise. 2 or 3 Credit Hours.

This course entails the study of decision-making techniques applicable to operations in both service and manufacturing enterprises. These techniques are examined as they apply to both traditional organizations and those in the dynamic world of new technology and e-business. The techniques are applied in areas such as supply chains, quality management, capacity planning, and resource allocation. Software is used to help students apply these techniques in course projects related to the workplace.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

MSOM 5882. Independent Study. 1 to 6 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

MSOM 5890. Special Topics. 1 to 6 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

MSOM 9101. Continuous and Nonlinear Optimization Methods. 3 Credit Hours.

This course will aim to introduce the basic principles of Continuous Non-Linear Optimization and Optimal Control Theory. Some related Non-Linear Optimization and Optimal Control Theory papers (either existing paper or new idea) will be presented by students after lectures.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

MSOM 9102. Linear Optimization Methods. 3 Credit Hours.

This course will cover how to model large-size problems using linear programming and integer programming and solve them using solvers as CPLEX. We will discuss various applications of optimization tools to business problems and discuss various research papers with applications of linear programming and integer programming models.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

MSOM 9103. Combinatorial and Discrete Optimization. 3 Credit Hours.

This class will cover the theory and applications of combinatorial optimization. We introduce graphical and network modeling of problems in transportation and distribution, facility location, communication, scheduling, and staff assignment.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

MSOM 9104. Stochastic Modeling and Optimization. 3 Credit Hours.

This class will introduce students to the modeling of stochastic, or random, phenomena and the application of these models to problems in operations and supply chain management. Topics include Poisson processes, binomial and exponential distributions, Markov chains and their applications (in particular to queueing theory), as well as Markov renewal theory and continuous-time Markov processes.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.