OPRE 6000 Professional Development (0 semester credit hours) This course is designed to enhance the students' experience such as building networking skills, verbal and written communication skills, business etiquette and learning how to increase their human capital. The goal of this course is to make students more marketable and valuable professionals to the global economy. (1-0) S (2016-02-05 18:48:18)

OPRE 6250 Global Supply Chain Management (2 semester credit hours) Executive Education Course. This course addresses the design and management of global supply chain including international sourcing, integration of suppliers and distribution channels. Prerequisite: OPRE 6201 or OPRE 6302. (2-0) Y (2016-02-05 18:48:18)

OPRE 6271 Project Overview, Strategic and Process Management (2 semester credit hours) Executive Education Course. Introduces the project lifecycle, typical project management processes, leadership and teaming in project management, the relevance of business process analysis, strategic alignment of projects, and financial considerations in project selection. (2-0) R (2016-02-05 18:48:18)

OPRE 6301 (SYSM 6303) Quantitative Introduction to Risk and Uncertainty in Business (3 semester credit hours) Introduction to statistical and probabilistic methods and theory applicable to situations faced by managers. Topics include: data presentation and summarization, regression analysis, fundamental probability theory and random variables, introductory decision analysis, estimation, confidence intervals, hypothesis testing, and One Way ANOVA. (Some sections of this class may require a laptop computer). (3-0) S (2016-02-05 18:48:18)

OPRE 6302 (SYSM 6334) Operations Management (3 semester credit hours) Operations Management integrates all of the activities and processes that are necessary to provide products and services. This course overviews methods and models that help managers make better operating decisions over time. How these methods will allow firms to operate both manufacturing and service facilities in order to compete in a global environment will also be discussed. Prerequisite: OPRE 6301. (3-0) S (2016-02-05 18:48:18)

OPRE 6303 Quantitative Foundations of Business (3 semester credit hours) This course discusses the applications of some basic mathematical concepts necessary for the business environment. Students are introduced to selected topics, including those in college algebra, matrix algebra, calculus, and optimization, and their usage in the context of managerial decision-making. MS Excel is used to illustrate and understand the core concepts. Department consent required. (3-0) S (2016-02-05 18:48:18)

OPRE 6325 (HMGT 6325) Healthcare Operations Management (3 semester credit hours) Explores how effectively managing and continuously improving the end-to-end health care supply chain provides a competitive advantage. Topics include supply chain fundamentals, key players in the health care supply chain and their challenges, how the health care supply chain works, impact of technology on supply chain performance, and lean six sigma methodology. Simulations and case studies will reinforce the learning. (3-0) Y (2016-02-05 18:48:18)

OPRE 6332 Spreadsheet Modeling and Analytics (3 semester credit hours) This course explains the concepts of effective spreadsheet design and model building utilizing the electronic spreadsheet as the
The course helps students to take an analytic view and acquire knowledge about specific decision making techniques for business, such as optimization and simulation, building spreadsheet models to identify choices, formalize trade-offs, specify constraints, perform sensitivity analyses, and analyze the impact of uncertainty. The course also examines the applications in finance, economics, marketing, and operations. (3-0) S (2016-02-05 18:48:18)

OPRE 6335 (SYSM 6304) Risk and Decision Analysis (3 semester credit hours) This course provides an overview of the main concepts and methods of risk assessment, risk management, and decision analysis. The methods used in industry, such as probabilistic risk assessment, six sigma, and reliability, are discussed. Advanced methods from economics and finance (decision optimization and portfolio analysis) are presented. Prerequisite: OPRE 6301 or SYSM 6303. (3-0) T (2016-02-05 18:48:18)

OPRE 6340 (MECH 6335) Flexible Manufacturing Strategies (3 semester credit hours) The use of automation in manufacturing is continuously increasing. This course covers the variety of types of flexible automation, including flexible manufacturing systems, integrated circuit fabrication and assembly, and robotics. Examples of international systems are discussed to show the wide variety of systems designs and problems. Strategic as well as economic justification issues are covered. (3-0) R (2016-02-05 18:48:18)

OPRE 6341 Retail Operations (3 semester credit hours) This course will examine new developments in retailing and the application of operations management principles to those developments. Topics include demand forecasting methods, responsive supply chains, incentives, store execution, assortment planning, in-store experiments, retailing in emerging markets, online retailing, innovation, use of technology such as radio frequency identification (RFID), growth and risk management, performance assessment, and impact on financial performance. Special attention will be given to the global nature of the retail industry and its development in emerging markets. (3-0) Y (2016-02-05 18:48:18)

OPRE 6342 Special Topics in Product Lifecycle and Supply Chain Management (3 semester credit hours) Executive Education Course. This course introduces selected topics in product lifecycle and supply chain management. Students will be exposed to technology solutions, value management and business simulations to learn the interactions and challenges in decision making in a real world supply chain environment. Instructor consent required. (3-0) Y (2016-02-05 18:48:18)

OPRE 6355 (MECO 6355) Experimental Management Sciences (3 semester credit hours) This course introduces the behavioral management science and operations management, with the goal of exposing students to behavioral research and gaining deeper understanding into how to enrich the standard management science paradigm with behavioral insights. The course also covers topics including an introduction to designing and conducting laboratory experiments, individual decision-making, supply chain contracts, and behavioral marked design. (3-0) R (2016-02-05 18:48:18)

OPRE 6362 (SYSM 6311) Project Management in Engineering and Operations (3 semester credit hours) Project management is the discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives. The course will cover various aspects of managing projects in engineering and operations environments including the critical path methods for planning and controlling projects, time and cost tradeoffs, resource utilization, organizational design, conflict resolution and stochastic considerations. (3-0) S (2016-02-05 18:48:18)

OPRE 6363 Inventory Control (3 semester credit hours) Analysis of deterministic and simple stochastic inventory models. Stochastic periodic reorder models with simple deterministic and simulation solutions. Lot size models and their extensions, reorder point determination, price break, Wagner-Whitin, Modigliani-Holn models. Prerequisite: OPRE 6302 or instructor consent required. (3-0) R (2016-02-05 18:48:18)
OPRE 6364 Quality Control (Lean Six Sigma) (3 semester credit hours) Concepts and theory of quality control in manufacturing and service operations. Analysis of product design, process capability studies, statistical process control, and acceptance sampling. (3-0) S (2016-02-05 18:48:18)

OPRE 6366 Global Supply Chain Management (3 semester credit hours) Key issues associated with the design and management of industrial supply chains. The efficient integration of suppliers, factories, warehouses, and stores so that products are distributed to global customers in the right quantity and at the right time. Prerequisite: OPRE 6302 or instructor consent required. (3-0) S (2016-02-05 18:48:18)

OPRE 6367 Capstone Projects in Supply Chain Management (3 semester credit hours) Capstone projects are sponsored by local industries and provide the students an opportunity to apply the skills and knowledge gained to solve real world challenging problems in the area of supply chain management. Students work in a team environment, interact with industry leaders, and gain some industry specific knowledge. Prerequisites: OPRE 6366 and OPRE 6370 and instructor consent required. (3-0) Y (2016-02-05 18:48:18)

OPRE 6368 Industrial Applications in Supply Chains (3 semester credit hours) The course discusses and reviews major supply chain challenges and relevant decision making tools used in the industry. The course proceeds with the analysis of real-life cases during which the students obtain industry specific knowledge. Some of the industries of interest are Telecommunications, High-tech Electronics, Semiconductors, Consumer Goods and Retail. Prerequisite: OPRE 6366 or instructor consent required. (3-0) R (2016-02-05 18:48:18)

OPRE 6369 (MIS 6369) Supply Chain Software (3 semester credit hours) The course teaches planning and execution of supply chains with software such as SAP's ERP (R3) and Advanced Planning and Optimization (APO). This software is used in lab exercises that provide students with hands-on, experimental learning. The focus is on the supply planning function of supply chain management. Topics include: fundamentals of ERP and SAP, master and transaction data, MRP, forecasting, supply and demand matching, and integration of ERP and APO modules. This course is intended for graduate students with interests in software-based supply chain management. No SAP experience is required. (3-0) S (2016-02-05 18:48:18)

OPRE 6370 Global Logistics and Transportation (3 semester credit hours) This course focuses on the design and analysis of global logistics, transportation and supply chain systems including the components such as suppliers, warehouse, packaging and material handling, customers, production, inventory, orders, transportation, and information systems. The course also discusses the interactions between these components; models and techniques for the analysis of logistics systems as well as the strategic financial outcomes influenced by the logistics decisions. Prerequisite: OPRE 6302 or instructor consent required. (3-0) S (2016-02-05 18:48:18)

OPRE 6371 Purchasing, Sourcing and Contract Management (3 semester credit hours) Basic concepts and processes in purchasing, sourcing and contract management are introduced in this course. It teaches global sourcing techniques and the application of various management tools and quality tools in purchasing. Focus is on the proactive and planned analysis of supply markets and the selection of suppliers, with the objective of delivering solutions to meet pre-determined and agreed organizational needs. (3-0) S (2016-02-05 18:48:18)

OPRE 6372 Project Initiation (3 semester credit hours) Executive Education Course. Explores project manager credentialing, professional ethics, and project management in a global environment; then bridges from strategy to project definition with a discussion of project selection and a focus on determining project
requirements and managing changes. Course delivery is integrated with relevant modules from OB 6301 Organizational Behavior. Prerequisite: OPRE 6271. (3-0) R (2016-02-05 18:48:18)

OPRE 6373 Project Planning (3 semester credit hours) Executive Education Course. Continues from project initiation and covers the initial stages of planning a project, including scope management, quality planning, project team building, dealing with conflict, and negotiation. Course delivery is integrated with relevant modules from OB 6301 Organizational Behavior. Prerequisite: OPRE 6372. (3-0) R (2016-02-05 18:48:18)

OPRE 6374 Project Planning and Execution (3 semester credit hours) Executive Education Course. Continues the discussion of planning techniques from OPRE 6373 and introduces execution phase processes. Topics include scheduling, resource planning, budgeting, negotiation skills development, and risk management. Prerequisite: OPRE 6373. (3-0) R (2016-02-05 18:48:18)

OPRE 6375 Project Execution and Closeout (3 semester credit hours) Executive Education Course. Continues the discussion of planning and execution techniques from OPRE 6374 and discusses project closeout. Topics include project procurement management, earned value management, lean and six sigma methodologies, and project execution and control. Prerequisite: OPRE 6374. (3-0) R (2016-02-05 18:48:18)

OPRE 6376 Advanced Project Management and Simulation (3 semester credit hours) Executive Education Course. Explores project organizational competence, maturity models, project portfolio management, program management, PM offices, alternate project management methodologies including Agile and simulates a project lifecycle. Prerequisite: OPRE 6375. (3-0) R (2016-02-05 18:48:18)

OPRE 6377 Demand and Revenue Management (3 semester credit hours) Executive Education Course. This course focuses on the expense involved in managing conventional and idiosyncratic demand through the supply process. Demand for a single unit or an assembly (network) of units requires forecasting that incorporates prices and macroeconomic factors. Perishable supplies are optimally priced by considering their amount (inflated in overbooking), location, vintage, and customer classes. This approach is relevant for airlines, hotels, parks, rental cars, broadcasters, art/sport events, and retailers. (3-0) Y (2016-02-05 18:48:18)

OPRE 6378 Supply Chain Strategy (3 semester credit hours) Executive Education Course. The success of a product (and a firm) in today's global marketplace depends on activities of firms in the product's supply chain. Students will learn how to develop strategies to create value through supply chain design, how to better structure a company's global operations strategy, how to develop guidelines for making strategic sourcing and make-buy decisions, how to deploy operations for successful turnarounds, and how to effectively use information technology to synchronize and manage global supply chains. Case studies will cover recent trends in supply chain strategy and key competencies required to be successful in a global marketplace. Prerequisite: OPRE 6301 or instructor consent required. (3-0) Y (2016-02-05 18:48:18)

OPRE 6379 Product Lifecycle Management (3 semester credit hours) Executive Education Course. This course provides a management approach to new product development, product lifecycle management and its impact on supply chain management. Topics include the management of product portfolio transitions, resources, schema and modeling for bills of materials, change management, and product cost management. (3-0) R (2016-02-05 18:48:18)

OPRE 6387 Models of Energy Markets (3 semester credit hours) Executive Education Course. Covers market models of energy markets for oil, natural gas, and electricity. A balance of theory and case study analysis is employed to give students an understanding of how theoretically formulated models can be applied to real world circumstances, and especially to current issues in global energy markets. Topics include models of supply and demand, market
structure, transportation models, game theory strategies, risk management, environmental issues, policy and regulation, and dynamic optimization. (3-0) R (2016-02-05 18:48:18)

**OPRE 6388** Engineering Packaged Goods Distribution (3 semester credit hours) This course covers both warehouse and DSD models of distribution common in CPG industry, in which network engineering design, distribution and replenishment planning and transportation planning / execution are performed. Students will also learn about unique distribution engineering aspects of returns, recycling, variety and display products and push/pull/hybrid delivery. In addition, this class focuses heavily on the practical operational aspects of distribution management through discussion and case studies. (3-0) Y (2016-02-05 18:48:18)

**OPRE 6389** Managing Energy: Risk, Investment, Technology (MERIT) (3 semester credit hours) MERIT is designed for students or professionals interested in the energy sector. Energy sector houses applications from several academic disciplines: operations management, engineering and technology, risk management, economics, and finance. Students currently involved in these and similar academic programs can take MERIT to learn the fundamentals of the energy sector. (3-0) R (2016-02-05 18:48:18)

**OPRE 6398** (BUAN 6398) Prescriptive Analytics (3 semester credit hours) Introduction to decision analysis and optimization techniques. Topics include linear programming, decision analysis, integer programming, and other optimization models. Applications of these models to business problems will be emphasized. (3-0) S (2016-02-05 18:48:18)

**OPRE 6V98** Supply Chain Management Internship (1-3 semester credit hours) Student gains experience and improves skills through appropriate developmental work assignments in a real business environment. Student must identify and submit specific business learning objectives at the beginning of the semester. The student must demonstrate exposure to the managerial perspective via involvement or observation. At semester end, student prepares an oral or poster presentation, or a written paper reflecting on the work experience. Student performance is evaluated by the work supervisor. Pass/Fail only. May be repeated for credit as topics vary (3 semester credit hours maximum). JSOM Internship Coordinator consent required. ([1-3]-0) S (2016-02-05 18:48:18)

**OPRE 6V99** Special Topics in Operations Research (1-4 semester credit hours) May be lecture, readings or individualized study. May be repeated for credit as topics vary. Department consent required. ([1-4]-0) S (2016-02-05 18:48:18)

**OPRE 7309** Behavioral Operations Management (3 semester credit hours) This course covers various topics in behavioral operations management including introduction to using laboratory experiments in operations, individual decisions, supply chain contracts and behavioral marked design in a seminar format. The main goal of the course is to expose students to behavioral research and gain deeper understanding of the limitations of the standard operations management paradigm. The main deliverable in the course will be a proposal for a laboratory study, including hypotheses, treatments and factors. Those who wish to pursue this research further will have an opportunity to conduct their studies with human subjects. (3-0) R (2016-02-05 18:48:18)

**OPRE 7310** Probability and Stochastic Processes (3 semester credit hours) Basic concepts and methods from probability theory that are useful in the modeling of complex systems. Topics include Poisson and renewal processes, discrete and continuous-time Markov chains, semi-Markov processes, and various concepts of stochastic ordering. Instructor consent required. (3-0) Y (2016-02-05 18:48:18)

**OPRE 7311** Stochastic Models in Operations Research (3 semester credit hours) This course is a systematic study of important classes of stochastic models in operation research. Topics include renewal theory.
Markov chains, semi-Markov processes, queuing models, stochastic ordering concepts, and Brownian motion. Instructor consent required. (3-0) R (2016-02-05 18:48:18)

**OPRE 7313** Network Flow (3 semester credit hours) Network flow models and solution algorithms. Matrix representations and properties, max-flow algorithms, min-cost flow algorithms, circulation and feasibility theorems, sensitivity analysis, integrality property of solutions, shortest route methods, Problems with special structure, CPT-PERT, multicommodity flows, matching, traveling salesperson problem. (3-0) T (2016-02-05 18:48:18)

**OPRE 7315** Dynamic Programming (3 semester credit hours) This course is an introduction to both deterministic and stochastic dynamic programming. The basic ideas of recursion and functional equation will be introduced. A wide variety of applications will be used to illustrate these concepts. Specific topics include: Markov and Semi-Markov decision processes, principle of optimality, structure of optimal policies under various cost criteria, LP formulations, and policy-improvement techniques. Instructor consent required. (3-0) R (2016-02-05 18:48:18)

**OPRE 7320** Optimal Control Theory and Applications (3 semester credit hours) This course is an introduction to Optimal Control Theory and a survey of its selected applications in finance, production, marketing and economics. Relationships to dynamic programming and Kuhn-Tucker conditions are also pointed out. Emphasis is on modeling and not on mathematical rigor. Students should have two semesters of calculus including some knowledge of differential equations and linear algebra or instructor consent required. (3-0) Y (2016-02-05 18:48:18)

**OPRE 7330** Deterministic Models in Operations Research (3 semester credit hours) Topics include linear programming, sensitivity analysis and duality, assignment problems, network models, integer programming, nonlinear programming, sequencing and scheduling models. (3-0) Y (2016-02-05 18:48:18)

**OPRE 7346** Differential Games and Applications (3 semester credit hours) Concepts and methods of game theory and differential games are presented, including both deterministic and stochastic models. The theory of necessary conditions, dynamic programming, and Nash equilibrium are discussed. Applications to economics and management are presented. Prerequisite: **OPRE 7320** or instructor consent required. (3-0) T (2016-02-05 18:48:18)

**OPRE 7351** Seminar in Operations Management (3 semester credit hours) This seminar covers topics of current research in the area of operations management. Research papers are presented on a variety of topics including: supply chain management, inventory models, production planning and control, design and scheduling of cellular manufacturing systems, and decision and risk analysis. Pass/Fail only. May be repeated for credit as topics vary (18 semester credit hours maximum). Instructor consent required. (3-0) Y (2016-02-05 18:48:18)

**OPRE 7352** Teaching Practicum in Operations Management (3 semester credit hours) Under the supervision of a faculty member, student assumes all instructional responsibilities for a course, including: developing the syllabus, delivering the lectures and grading. Pass/Fail only. May be repeated for credit as topics vary (15 semester credit hours maximum). Instructor consent required. (3-0) Y (2016-02-05 18:48:18)

**OPRE 7353** Optimization (3 semester credit hours) The course covers the fundamentals of optimization theory and introduces linear algebra and real analysis. Topics include existence of an optimal solution, unconstrained and constrained optima, convexity and quasi-convexity, and linear programming. Instructor consent required. (3-0) Y (2016-02-05 18:48:18)
OPRE 7372 Advanced Topics in Supply Networks - Advanced Risk Analysis (3 semester credit hours) This course will focus on probabilistic, statistical and optimization techniques needed in risk analysis and decision-making. The domain is in full development and appropriate for active research. The methods are generic and applicable in finance as well as in operations management. Prerequisites: OPRE 6302 and OR 6330 and OPRE 6366 and instructor consent required. (3-0) R (2016-02-05 18:48:18)