Rensselaer

Lally School of Management
Student Services

M.S. in Supply Chain Management (SPCM)
Fall 2020 & Spring 2021
Course Descriptions

Required Professional Development & Career Workshops

- **MGMT 7770 Prof. Development Workshop 1**

The PDW sequence is designed to develop the professional skills of students in the MS Programs that are needed to be a successful contributor in a business setting. PDW I follows a framework of Leadership, Followership, and Membership in a professional community. Students will gain practical experience through exposure to experts in specific skill areas, role-play and practice sessions, and exercise completions. The fall semester concentrates on individual skills development in presentation, communication and networking. Additionally, membership in one's professional community will be emphasized through engagement in two activities specific to the student's MS Program. Building on the skills and abilities obtained earlier in your career, this PDW is geared toward a higher level of professionalism inherent in a successful business environment.

- **MGMT 7780 Prof. Development Workshop 2**

The PDW sequence is designed to develop the professional skills of students in the MS Programs that are needed to be a successful contributor in a business setting. The PDW II will continue to follow a framework of Leadership, Followership and Membership in a professional community. Students will gain practical experience through exposure to experts in specific skill areas, role-play and practice sessions, and exercise completions. The second semester emphasizes developing influence skills, understanding and shaping group dynamics, and navigating organizational politics. Additionally, membership in one's professional community will be emphasized through engagement in four hours of activities specific to the student's M.S. program.

Required SPCM Core:

<u>Fall</u>

- **MGMT 6190 Intro to Accounting and Financial Management***

* Can be waived and replaced with advanced finance such as MGMT6020, MGMT 6510, MGMT 6520, MGMT7760 or an advanced management class by approval. *

This course introduces accounting and financial management to first-semester M.S. students. The interpretation and preparation of basic financial statements such as the balance sheet and income statement are introduced along with relevant regulation and practice. In addition, the course introduces the student to basic financial concepts and techniques such as time value, risk, equilibrium asset pricing models, capital budgeting, cost of capital, and capital structure and discusses their applications in practice.

- **MGMT 6100 Foundations of Data Science**

* Pre-requisites: none

Every dataset tells a unique story, and in this course, students learn to elicit these stories from data. The course develops students' ability to ask critical questions about their data in order to better understand it. Students will run tests to identify data problems and will learn how to take corrective actions. In addition, the course covers important parametric and non-parametric tests, and discusses their benefits and limitations in a big data world.

- **MGMT 6080 Networks Innovation and Value Creation**

This course considers the evolving new models of value creation and business growth being introduced across different industries and examines such critical issues as product and process technology strategy, operational innovation, IT strategies and infrastructures, networks and organization, and finance. Utilizing a series of case studies from across a range of industry networks, students will have a chance to learn how companies can participate in such networks and what unique business resources and capabilities they can employ to enhance their probability of commercial success.

- **MGMT 6460 Modeling and Optimization**

This graduate level course is designed to provide the student with an understanding of the applications of quantitative models, methods, algorithms, and computational techniques across business functions. You will investigate how to apply optimization methods using a hands-on implementation approach.

- **MGMT 6490 Competitive Advantage and Operations Strategy**

This course includes topics such as manufacturing as a competitive weapon; management of quality; manufacturing technology implementation; strategic impact of advanced manufacturing technologies; and manufacturing's role in new product development.

<u>Spring</u>

- **ISYE 6600 Design of Manufacturing Systems Supply Chains**

Dynamics of manufacturing systems and supply chains, lean manufacturing, lead time reduction in manufacturing and service operations, advanced pull systems, concurrent design of products and supply chains, rapid new product introduction, remanufacturing and reverse supply chains, and integration of information technology in supply chain operations. Analysis of models and their application to design and planning problems in manufacturing as well as service systems is emphasized.

- **MGMT 6560 Introduction to Machine Learning Applications**

The widespread proliferation of IT-influenced economic activity leaves behind a rich trail of micro-level data, enabling organizations to use analytics and experimentation in both strategy and operations. This course provides a hands-on introduction to the concepts, methods and processes of business analytics. Students will learn how to obtain data and draw business inferences from data by asking the right questions and using the appropriate tools.

- **MGMT 6140 Managing Digitization and Transformation**

Understanding technology-enabled changes in contemporary business environments, and how insightful executives leverage IT, is key to creating value and winning competitive advantage. This course develops an understanding of cutting-edge technological trends and their potential business impact. The course also explores the business drivers of technology-related decisions in firms and stimulates thought on new applications of technology for commerce, including new products, processes, and business models. Topics covered include: how different business models necessitate different kinds of IT investments; how IT coupled with big data analytics impacts different industries; whether and how IT hastens and aids the growth of disruptive innovations; and how organizations should adapt to the digital economy.

- **MGMT 6310 Supply Chain Capstone**

This course provides students with an opportunity to work on real business supply chain opportunities with companies in a student team over a four-to-five month period. Students work together as a consulting team with a client and adviser(s) in a business environment to develop solutions that will be put to use by the client to achieve significant business benefits. Student teams develop their analysis and recommendations and complete the project with the delivery of a final report and presentation to the client senior management.

Elective Course:

- **MGMT 6160 Applied Analytics and Predictive Modeling**

Business analytics enables organizations to leverage large volumes of data in order to make more informed decisions. It encompasses a range of approaches to integrating, organizing, and applying data in various settings. This course develops an understanding of concepts in business analytics and data manipulation. In particular, through hands-on experience with a range of techniques students will learn to work with large data sets, analyze trends and segments and develop models for prediction and forecasting. This course is part of the Masters program in Business Analytics and builds on foundations learned in the Fall semester.

- **MGMT 6690 Negotiation**

This course is designed to help develop essential expertise in managing negotiations that occur in a broad array of settings. Students will learn to recognize types of negotiation, and gain proficiency in helping to shape beneficial outcomes. Students will develop negotiate skills experientially using a variety of exercises and case students while implementing useful analytical frameworks.

- **MGMT 6530 Making Business Happen**

Analyze the process of identifying prospective markets and customers, developing channels, defining the value proposition, selling products and services, and managing a sales force. Learn about tools ranging from customized consultative sales to commodity, brokering, customer relationship management systems to trade press

articles. Develop the skills to effectively listen, recognize opportunity, verbally persuade, handle objections and prospect. Develop an understanding of customer needs, approach strategies and effective presentations.

- **MGMT 6570 Advanced Data Resource Management**

The primary objective of this course is to introduce the multifaceted role of data as a resource of the organization, in three ways. First, it examines the role of data at the operational, tactical, and strategic levels of the organization. Second, it provides students with knowledge and hands on training of technologies that manipulate data, including structured query language (SQL), extraction transformation and loading tools (ETL), data warehousing (DW), online analytical processing (OLAP), and data mining (DM). The course exposes students to big data management techniques. Finally, the course provides students the theory and hands on training to understand the transformation of data to information.

- **MGMT 6350 Supply Chain Analytics**

This is a hands on course where students learn a mix of theoretical and practical tools and use them to solve a variety of supply chain problems, both analytically and numerically. Time series, Markov chain, optimal control, linear programming, statistical analysis, and other mathematical tools are used to examine data to understand supply, demand and inventory levels and develop insights for managerial recommendations.

- **MGMT 7030 Strategy Technology & Competition**

*Pre-requisites: MGMT6040 and MGMT7730 or permission of the instructor.
This course covers the fundamentals of business and corporate strategy, integrating these concepts into an environment of technological change, competition, and entrepreneurship. The course includes the following areas of emphasis: concepts of strategy, industry environment, resources and capabilities of the firm, organization and systems of the firm, the dynamics of competitive advantage, strategic alternative analysis, and strategies in different contexts. The course uses business cases and a project to enrich the theoretical concepts.

*MGMT 6190 can be waived and replaced with an upper level finance course suggested on this partial list:

- **MGMT 6020 Financial Management I**

The purpose of this course is to develop a working understanding of the major investment and financial decisions of the firm. Emphasis will be placed upon identifying and solving the problems commonly faced by financial managers. The course presents the needed theory and develops financial problem solving skills through individualized problem solving, structured case analysis, and industry and company analysis using Internet sources.

- **MGMT 6520 Financial Modeling & Optimization**

* Pre-requisite: MGMT 6020 or permission of instructor
This course introduces quantitative analysis for financial markets and instruments. The course covers applications of mathematical tools and optimization modeling to portfolio

selection and fund management, risk analysis, hedging and valuation of financial assets, and financial planning under uncertainty. The course introduces applications of calculus, differential equations, and introduces stochastic processes within a financial markets context to address arbitrage pricing and equilibrium asset pricing models.

- **MGMT 6370 Options Futures & Derivatives Markets**

* Pre-requisite: MGMT 6020 or permission of instructor

The purpose of this course is to provide an introduction to second generation financial instruments including forward and future contracts, options, future options and swaps on a variety of underlying instruments including fixed income securities. The fixed income markets will be integrated with the discussion of IRDs (interest rate derivatives.)

- **MGMT 6240 Financial Trading and Investing**

* Pre-requisite: MGMT 6020 or permission of instructor

This course introduces interactive trading in financial instruments. Students learn the principles of asset price discovery and trading methods in a variety of markets, including equities, bonds, options, and other derivatives. Investing topics addressed include the application of quantitative methods in asset valuation, portfolio design, alternative investments, and risk management. Students work in teams of two in programming assignments involving foreign exchange markets, equities trading, and portfolio construction.

- **MGMT 6400 Financial Econometrics Modeling**

This course addresses financial modeling as an empirical activity. Several key issues and assumptions of finance are addressed through empirical modeling. Topics may include asset pricing, event studies, exchange rate movements, term structure of interest rates, and international linkages among financial markets. Computers are used extensively both in and out of class.