Overview

RIT’s Master of Science in Manufacturing Leadership (MML) is designed for experienced professionals who aspire to mid- and senior-level positions in manufacturing and service organizations. The program integrates business and engineering courses consistent with cross-functional competence so critical to operational excellence in operations, supply chain management, manufacturing, and process improvement.

The MML program was developed jointly by the Saunders College of Business and the Kate Gleason College of Engineering. State-of-the-art tools and techniques are integral to the program, and unifying themes include leadership, cross-functional and cross-cultural teaming, global operations, lean thinking, process engineering, and systems-oriented business decision making. A Capstone project, oriented to the solution of a manufacturing or services management problem or process improvement initiative, enables students to apply new skills and capabilities to the solution of a pressing real-world problem, with significant financial benefit to sponsors.

The curriculum

The 30-semester-credit MML program consists of 9 business and engineering courses, including one elective, plus a Capstone project (3 credits). The program is offered fully on-line or as a blend of on-line and on-campus courses.

- Organizational Behavior and Leadership (MGMT-740)
- Supply Chain Management (ISEE-703)
- Lean Six Sigma Fundamentals (ISEE-682)
- Manufacturing Systems (ISEE-745)
- Global Facilities Planning (ISEE-723)
- Engineering of Systems I (ISEE-771)
- Systems and Project Management (ISEE-750) or Project Management (BUSI-710)
- Accounting for Decision Makers (ACCT-603) or Cost Accounting in Technical Organizations (ACCT-794)
- MML Capstone (ISEE-793)
- Elective

Capstone project

Students complete a project at the conclusion of the MML program, based on a real-world problem often identified in the students’ companies. The corporate-oriented Capstone project is directed at the solution of a manufacturing or services management problem or process improvement initiative. It enables students to broaden the MML educational experience and demonstrate the knowledge and skills essential to business leadership. The project provides immediate benefits to sponsoring organizations and is an excellent opportunity for students to gain visibility and recognition. Most projects result in substantial cost savings or improved efficiencies.
Educational objective

To educate graduates to lead teams and organizations within a manufacturing or service enterprise for successful competition in a complex global economy, through the integration of business and technical skills. The application-oriented MML program is designed to help experienced professionals move into mid- and senior-level management positions in operations, manufacturing, supply chain management, and process improvement.

Key Capabilities of Graduates

- **Ability to make sound business decisions in a complex global economy:** business planning with full understanding of outsourcing and offshoring; financial management and total/life-cycle cost; agile decision-making.
- **Ability to manage the global supply chain:** supply chain strategy development and execution; logistics management (quality and delivery assurance); systems needs for supply chain management; and supply chain optimization.
- **Ability to manage global, multi-site production and operations:** managing distributed teams; process technology transfer to domestic and international locations; service operations; enterprise and manufacturing strategies; lean operations; location strategy and facility design; state-of-the-art tools; regulatory issues and established norms.
- **Comprehensive understanding of quality and continuous improvement principles, with application to the manufacturing and operations management.**
- **Strong leadership and management skills applied to global high technology manufacturing:** systems thinking, planning, and management; applications (“hands-on”) orientation; project management expertise (planning, relationship management, control, risk management and decision-making); creative leadership to drive innovative solutions; enhanced ability to recognize barriers to success early, when corrective actions are least costly.

Admission Requirements

Candidates should have an undergraduate degree from an accredited institution with a minimum GPA of 3.0, and at least two years experience in a manufacturing or service organization or business environment. **No graduate entrance exam is required.** Applications can be submitted to RIT at any time – admission is on a rolling basis.

Admitted students must possess prerequisite knowledge and skills at the introductory course level in the following areas: probability and statistics, engineering economy or basic finance, and manufacturing processes. Areas that need strengthening can be addressed by guided reading, formal course work, independent study, seminars, or other suitable means.

Program cost

Contact the Program Office for RIT’s current part-time graduate tuition rate. Discounts are available for groups.
Course Descriptions

Required Courses

Organizational Behavior and Leadership (MGMT-740)
This course examines why people behave as they do in organizations and what managers can do to improve organizational performance by influencing people's behavior. Students will be exposed to the ways in which organizations and their members affect one another and to different frameworks for diagnosing and dealing with problems in organizational settings. Topics include motivation, team building, conflict resolution, leadership, organizational change, and managing organizational cultures (3 credits).

Supply Chain Management (ISEE-703)
Supply chain management is unique in that it is one of the oldest business activities and yet has been recently “discovered” as a potentially powerful source of competitive advantage. Supply chain system activities – planning production levels, forecasting demand, managing inventory, warehousing, transportation, and locating facilities have been performed since the start of commercial activity. It is difficult to visualize any product that could reach a customer without a consciously designed supply chain. Yet it is only recently that many firms have started focusing on supply chain management. There is a realization that no company can do any better than its supply chain and logistics systems. This becomes even more important given that product life cycles are shrinking and competition is intense. Logistics and supply chain management today represents a great challenge and a tremendous opportunity for most firms (3 credits).

Systems and Project Management (ISEE-750)
Systems and Project Management ensures progress toward objectives, proper deployment and conservation of human and financial resources, and achievement of cost and schedule targets. The focus of this course is on the utilization of a diverse set of project management methods and tools. Topics include strategic project management, project and organizational learning, cost, schedule planning and control, structuring of performance measures and metrics, technical teams and project management, information technology support of teams, risk management, and process control. Course delivery consists of lectures, speakers, case studies, and experience sharing, and reinforces collaborative project-based learning and continuous improvement (3 credits).

Manufacturing Systems (ISEE-745)
This course will provide an introduction to concepts and techniques in the design and analysis of production systems. A blend of traditional and modern approaches is brought into the classroom. At the end of the quarter, the student will be able to assess and analyze the performance of a given manufacturing system as well as to provide a framework for system redesign and improvement. Modern aspects such as lean manufacturing and setup time reduction are included in the context of the course (3 credits).

Lean Six Sigma Fundamentals (ISEE-682)
This course presents the philosophy and methods that enable participants to develop quality strategies and drive process improvements. The fundamental elements of Lean Six Sigma are covered along with many problem solving and statistical tools that are valuable in driving process improvements in a broad range of business environments and industries. Successful completion of this course is accompanied by “yellow belt” certification (for A’s and B’s only), and provides a solid foundation for those who also wish to pursue a “green belt.” (Green belt certification requires completion of an approved project and exam, both of which are beyond the scope of this course) (3 credits).
Global Facilities Planning (ISEE-723)
Facilities planning determines how an activity’s tangible fixed assets best support achieving the activity’s objective. This course will provide knowledge of the principles and practices of facility layout, material handling, storage and warehousing, and facility location for manufacturing and support facilities. Tools for sizing the resources needed, planning, design, evaluation, selection, and implementation will be covered. The focus of the course will cover both management and design aspects, with the focus being more heavily on the management aspects (3 credits).

Cost Accounting in Technical Organizations (ACCT-794)
A first course in accounting for students in technical disciplines. Topics include the distinction between external and internal accounting, cost behavior, product costing, profitability analysis, performance evaluation, capital budgeting, and transfer pricing. Emphasis is on issues encountered in technology intensive manufacturing organizations (3 credits). Accounting for Decision Makers (ACCT-703) may substitute for this course.

Accounting for Decision Makers (ACCT-603)
A graduate-level introduction to the use of accounting information by decision makers. The focus of the course is on two subject areas: (1) financial reporting concepts/issues and the use of general-purpose financial statements by internal and external decision makers; and (2) the development and use of special-purpose financial information intended to assist managers in planning and controlling an organization’s activities. Generally accepted accounting principles and issues related to International Financial Reporting Standards are considered while studying the first subject area and ethical issues impacting accounting are considered throughout (3 credits). This course may substitute for ACCT-794.

Engineering of Systems I (ISEE-771)
The engineering of a system is an essential aspect of its development that focuses on the overall concept, performance requirements and behavioral aspects of the system. This course treats the creation of products, product platforms and product families as systems that create value for both the customer and the enterprise. Topics include value creation and strategy, product development processes, translating market requirements to system requirements, functional analysis, development of the system’s architecture, development of platforms and modules, concept generation and selection, design for "X" (manufacturing/assembly/service/environment, etc.) and life cycle costing. Students will learn several systems analysis techniques and apply them in a team-based project (3 credits).

MML Capstone Project (ISEE-793)
The purpose of the project is for students to demonstrate integrative application of knowledge and skills that they have acquired during the program. A capstone project will be oriented to the solution of manufacturing, operations, or supply chain management problem or to technically related processes. Each project will define an actual problem and solve it, or select and develop a needed process. Each project must be approved in advance by the Capstone Coordinator. A suitable project will be multi-disciplinary or multi-functional in nature and will have significant impact on one or more competitive capabilities of the organization, e.g. quality, lead time, cost, flexibility, or service. Team-based projects are strongly recommended (3 credits).

Elective Courses
A few examples are provided below. Students may select from a much broader list of courses approved by the program. Descriptions and titles are available upon request.

- Production Systems Management (ISEE-728)
- Decision & Risk Benefit Analysis (ISEE-751)

Rochester Institute of Technology
Manufacturing Leadership Program
111 Lomb Memorial Drive
Rochester, NY 14623-5608

Telephone: 585-475-7971
Fax: 585-475-4080
E-mail: mml@rit.edu
Website: http://www.mml.rit.edu