

MASTER OF ENGINEERING IN**Industrial and Management Engineering**

Industrial and Management Engineering (IME) draws upon specialized knowledge in the mathematical, physical and behavioral sciences as well as principles of engineering analysis and design to specify, predict, evaluate, maintain, and improve the performance of productive systems. It is an engineering discipline that emphasizes interpersonal as well as technical skills. Rensselaer's Master's in IME is designed to educate engineers who can develop, implement and integrate systems made up of people, machines, materials, information and technology. Graduates from the program are prepared to lead efforts aimed at achieving productivity growth, quality leadership, cultural change in the workplace, the application of new technologies, and other important initiatives affecting the competitiveness and effectiveness of organizations. The prerequisites for the program are introductory courses in applied statistics and operations research; they may be taken as part of the master's degree plan of study. The program includes core courses in information systems, simulation modeling, strategic management of technological innovation, analytical models in manufacturing and logistical systems, and a restricted elective in applied statistics such as a quality control course. The core courses provide a foundation in the areas of information systems, computer based modeling, analytical modeling, statistical analysis, and management. Based on the student's interest and technical background, a concentration area is selected which provides depth in at least one area of specialization. In most cases, the concentration builds directly on one or more core courses.

ADMISSION REQUIREMENTS

- Bachelor of Science degree from an accredited undergraduate institution
- Strong undergraduate performance
- Evidence of strong quantitative and problem-solving skills
- Undergraduate GPA of 3.0 or higher
- Grades of "B" or better in courses completed since bachelor's degree
- Completed application form
- Official transcripts for all undergraduate and graduate work
- Statement of background and goals as it applies to the program
- GRE required
- TOEFL required for international students
- Two letters of recommendation
- Resume

GRADUATION REQUIREMENTS

- Matriculated Status
- Approved Plan of Study
- At least 15 credits must be at the 6000 level
- Minimum 3.0 GPA; minimum 30 credits

PLAN OF STUDY (30 credit hours)

The department offers the Master of Science and Master of Engineering degrees in Industrial and Management Engineering. Both degrees require a minimum of 30 credit hours. The Master of Science degree requires a thesis. The Master of Engineering degree is a non-thesis option. Prerequisite requirements for the Master's programs include the following courses or their equivalents:

DSES-4140	Statistical Analysis (or equivalent)
DSES-6610	Systems Modeling in Decision Sciences (or equivalent)

To complete the Master's degree requirements, students must include a minimum of 24 credits from the list of approved Industrial and Information Systems Engineering courses for the Master's program. The courses selected may include the two required prerequisite courses listed above but must simultaneously define an advisor-approved, application-focused concentration area, (e.g., manufacturing logistics, optimization, information security, etc.). A minimum of 50% of credit hours in the plan of study must be at the 6000 level or higher.

The following courses may be included among the 24 credits of restricted electives:

Approved Industrial and Information Systems Engineering Courses for the Master's Program:

DSES-4200	Design and Analysis of Work Systems
DSES-4210	Design and Analysis of Supply Chains
DSES-4230	Quality Control
DSES-4240	Engineering Project Management
DSES-4250	Facilities Planning and Industrial Logistics
DSES-4260	Industrial Safety and Hygiene
DSES-4290	Discrete Event Simulation Modeling and Analysis
DSES-4750	Probability Theory and Applications
DSES-4760	Mathematical Statistics
DSES-4780	Computational Optimization
DSES-4810	Computational Intelligence
DSES-4960	Optimization Algorithms and Applications
DSES-6010	Applied Regression Analysis
DSES-6020	Design of Experiments
DSES-6100	Time Series Analysis
DSES-6140	Exploratory Data Analysis
DSES-6180	Knowledge Discovery and Data Mining
DSES-6210	Theory of Production Scheduling
DSES-6500	Inf. and Decision Technologies for Industrial and Service Systems
DSES-6520	Enterprise Database Systems
DSES-6530	Decision Support and Expert Systems
DSES-6570	Information Technology and Systems for E-Business
DSES-6610	Systems Modeling in Decision Sciences
DSES-6760	Combinatorial Optimization and Integer Programming
DSES-6770	Linear Programming
DSES-6780	Nonlinear Programming
DSES-6820	Queuing Systems and Applications
DSES-6870	Introduction to Neural Networks