

School			
Major	Masters of Science in Industrial Engineering		
Major Requirements			
Code	Title	Credits	Description
EENG500L	Industrial Systems Automation and Control Lab	1	This lab introduces the Programmable Logic Controllers (PLC) in both simulation and experimental environments. Starting from the basics (ON/OFF contacts, impulse relays, rising edge, falling edge, and negated coil) in addition to the different connection that can be done (series and parallel connections). Moreover, it will be introducing the use of latching circuits, timers, counters, comparators and so on
IENG510	Manufacturing Systems	3	This course provides methodologies to analyze manufacturing systems. It presents the analytical approaches for modeling and analyzing models of manufacturing and production systems. Fundamental topics include probability, inventory and queuing models, optimization, buffer and batch-size analysis and concepts of Lean Manufacturing. Real life examples are discussed in terms of productivity and meeting customer expectations.
IENG550L	Industrial Engineering Field Visit	1	Students will conduct a field visit to an industrial facility. A report will need to be produced with focus on industrial engineering implications and observations. The course is concluded by a student presentation.
IENG560	Infrastructure and Facilities Management	3	Infrastructure and Facilities Management covers many areas related to facilities planning management, highlighting a wide range of subject matters on the analysis, design and evaluation of manufacturing facilities and material handling systems. The topics covered include definition of facilities planning, role of product process and schedule design, flow analysis and activity relationship, capacity and space requirements planning, computer aided layout planning, material handling systems and equipment, storage and warehousing, mathematical approaches to location problems, and performance evaluation and selection among alternatives.
IENG570	Occupational Safety Engineering	3	This course addresses a broad range of subjects relating to the practice of safety and provides useful practical knowledge which helps in identifying, evaluating, and controlling potential hazards that could harm people and environment such as the control of workplace hazards, occupational injuries, and diseases. It explains the safety codes, standards, ergonomics, and risk assessment and management.
IENG515	Organizational Environments	3	The course introduces the concept of organizations, their external and internal environments, organizational behavior, individuals in organizations, strategy in the workplace, group and team processes and key organizational processes along with success factors.
IENG555	Advanced Concepts in Quality Improvement	3	This course covers the concepts of designing a quality management system. It gives tools for cost saving, solving chronic and sporadic problems. Students will learn principles of quality management systems: auditing and assessment, detecting gaps and how to differentiate between non-conformities, writing audit report and opening improvement action form, calculating Key performance indicators, and writing process and procedures. The students will conduct a management review; taking corrective and preventive action in order to ensure KAIZEN “continual improvement”.
IENG565	Industrial Waste Management	3	This course describes the processes of industrial waste treatment and illustrates how current treatment techniques are affected by regulatory and economic constraints, scientific knowledge and tolerances. It provides the basis for a more effective method of waste treatment which is sustainable and supportive of industrial improvements by introducing the EBIC system as a system that tends to attain zero pollution. Overall, it provides valuable information for a better understanding of current practices and regulatory history and how these factors relate to the ability to complete environmental solutions to industrial waste problems.

IENG615	Operations Research	3	Operations research (OR) has many applications in science, engineering, economics, and industry and thus the ability to solve OR problems is crucial for both researchers and practitioners. Modern business managers make many decisions involving the interplay of time, money, energy, and materials. Since most business systems are complex, sophisticated decision making methods that will increase efficiency are needed. The allocation of resources can be represented and analyzed mathematically. This course is designed to equip the student with the knowledge and techniques to formulate, analyze and solve mathematical models that represent real-world problems. Being able to solve the real life problems and obtaining the right solution requires understanding and modeling the problem correctly and applying appropriate optimization tools and skills to solve the mathematical model. Students will also learn to use EXCEL and LINDO for solving optimization problems.
IENG695A	Master Thesis Project (Part I)	3	The master thesis project is a six credits research and application course that spans over two semesters. Students are expected to develop a theoretical or an applied model in their respective field of specialization. Students should write a thesis describing the research methodology, implementation and results. The developed model might be a valid numerical simulation, a well-functioning prototype or a well-supported mathematical or scientific model.
IENG695B	Master Thesis Project (Part II)	3	The master thesis project is a six credits research and application course that spans over two semesters. Students are expected to develop a theoretical or an applied model in their respective field of specialization. Students should write a thesis describing the research methodology, implementation and results. The developed model might be a valid numerical simulation, a well-functioning prototype or a well-supported mathematical or scientific model.
EENG500	Industrial Systems Automation and Control	3	This course covers the fundamentals, concepts, and design of PLC (Programmable Logic Controllers) based systems. The students gain knowledge of PLC programing and automation process control within industrial environment. The students get an overview of electrical distribution and hardware, industrial hardware, I/O modules, industrial networks systems, and SCADA (Supervisory control and data acquisition) systems. The students get an overview of the PLC's typical applications in the manufacturing industry in addition to hand-on design projects.
IENG551L	Industrial and Manufacturing Workshop	1	This workshop provides students with hands-on field experience on various aspects of industrial workshop tools, machining, processes and best practices. As a part of this experience, students will be exposed to: milling processes, lathe machining, electrical welding, drilling, filing and gas welding. Special considerations are given to occupational safety and health standards.
IENG650L	Industrial Engineering Graduate Seminar	1	The main prepose of this course is to acquaint the student with the abilities to search for contemporary industrial related topics and to address them in a professional atmosphere.
Core Requirements			
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ENGG550	Engineering Project Management and Control	3	This course covers the fundamentals of project management for engineering professionals. It reviews the project management framework in organizations and covers in depth the tools and techniques used in initiating, planning, executing, monitoring, controlling and concluding a project to achieve the set goals within schedule and budget targets. Real life engineering project examples are used to demonstrate the application of project management concepts to engineering projects. The course is aligned with the Project Management Institute's (PMI's) Project Management Body of Knowledge (PMBOK) and helps learners to prepare for PMI certification exams.