INDUSTRIAL ENGINEERING (IE-GY)

IE-GY 6063 Work Design and Measurement (3 Credits)
Typically offered occasionally
Principles and techniques of designing work methods and work simplification programs. Theory and techniques of workplace design, work measurement, time study, work sampling, standard data systems, methods analysis, rating, and work allowances. Applications of ergonomics and anthropometrics to promote worker health and safety in lean manufacturing environments.
Grading: Grad Poly Graded
Repeatable for additional credit: No

IE-GY 6113 Quality and Reliability Engineering (3 Credits)
Typically offered occasionally
This course provides students with a solid foundation in the cost of quality, quality assurance and quality management. Emphasis is on the basic tools of quality control such as control charts and their use, the concept of "out of control," acceptance sampling, variables and attributes charts and producer's and consumer's risk. A unique aspect of this course is the demonstration of the power of teams of people with different expertise to improve quality. A course project is required. | Prerequisite: MA-GY 6513 or familiarity with the concepts of probability and statistics. Also listed under MN-GY 6113.
Grading: Grad Poly Graded
Repeatable for additional credit: No

IE-GY 6203 Project Planning and Control (Project Management) (3 Credits)
Typically offered occasionally
This course discusses the knowledge and process required to manage a project through its life cycle, from concept to completion. Topics include engineering analysis, screening and selection, configuration and total quality management, scheduling using Program Evaluation and Review Technique (PERT) and Critical Path Method (CPM), budgeting and resource management, computer support and software. Case studies are used to illustrate the process.
Grading: Grad Poly Graded
Repeatable for additional credit: No

IE-GY 6213 Systems Planning and Design (3 Credits)
Typically offered occasionally
Topics in this course include facilities design for global competitiveness, strategic master-site planning, site selection, factory layout and design, facility-management systems and materials handling and storage planning. Also presented are guidance on selecting alternative facility plans and application of queuing methods and computer modeling for facility design and evaluation.
Grading: Grad Poly Graded
Repeatable for additional credit: No

IE-GY 6473 STRATEGIC CHANGE MANAGEMENT (3 Credits)
Typically offered Fall, Spring, and Summer terms
This course focuses on all aspects of defining, managing, and implementing large and complex organizational, and systems change. It encompasses core aspects of organizational behavior, team development and leadership to teach the effective components of how to ensure change initiatives can be both properly framed and effectively managed. | Prerequisite: Graduate Standing.
Grading: Grad Poly Graded
Repeatable for additional credit: No
Prerequisites: | Prerequisite: Graduate Standing.

IE-GY 6823 Discrete Events Simulation (3 Credits)
Typically offered occasionally
This course examines modeling and simulation of complex industrial, commercial and service systems, such as factories and hospitals. Students develop, run and test several simulation models using different software packages. | Prerequisite: Computer literacy.
Grading: Grad Poly Graded
Repeatable for additional credit: No

IE-GY 7873 Lean Transformation (3 Credits)
Typically offered occasionally
This course provides an overview to the basic principles, and theories of lean manufacturing which involves identifying and eliminating non-value-adding activities in design, production, and supply chain management. Students will learn an integrated approach to efficient manufacturing with emphasis on synchronized product, quick changeover, cell design, visual factory, value stream, one-piece flow and learn metrics.
Grading: Grad Poly Graded
Repeatable for additional credit: No

IE-GY 7893 Operations Research - Decision Science and Quantitative Methods (3 Credits)
Typically offered occasionally
This course reviews just-in-time and synchronous manufacturing methods. It analyzes the basic dynamics of factories to understand the importance of congestion and bottleneck rates on cycle time and inventories. Analytical models are developed to study variability and randomness introduced by breakdown, setups and batching. Simulation studies are used to provide data on performance of transfer lines.
Grading: Grad Poly Graded
Repeatable for additional credit: No

IE-GY 7993 SUPPLY CHAIN ENGINEERING (3 Credits)
Typically offered occasionally
Students in this course gain an understanding of how companies plan, source, make and deliver their products with a global competitive advantage. The course stresses the engineering components in developing an integrated supply chain that covers the entire manufacturing enterprise. It looks at the supply-chain infrastructure and the velocities of different models. The focus is on understanding and detecting the constraints of the infrastructure and the lowest common denominator of the information system used. Students also gain an understanding of logistical networks and the optimizing of the various traffic and location alternatives. Synchronization of supply and demand is examined in detail, looking at variability in both processes with the objective of maximizing throughput and capacity, emphasizing partnering, e-commerce and the bullwhip effect. Finally, the course establishes global performance measurements that compare companies in different industries.
Grading: Grad Poly Graded
Repeatable for additional credit: No

IE-GY 9113 Selected Topics in IE (3 Credits)
Typically offered occasionally
These topics cover areas not covered in other courses. Specific topics vary according to instructor, who may be a visiting professor. Topics and prerequisites announced during the term before classes.
Grading: Grad Poly Graded
Repeatable for additional credit: Yes

IE-GY 9503 INDUSTRIAL ENGINEERING CAPSTONE PROJECT (3 Credits)
Typically offered Fall, Spring, and Summer terms
This course serves as the experiential capstone in the graduate Industrial Engineering curriculum. This course will provide an important project-based experience for students to learn how to apply their classroom knowledge to actual organizational situations. They will learn how to work with key stakeholders and fellow teammates to define problems, develop statements of work, and lead projects that deliver measurable results to their project sponsors. | Prerequisite: Graduate Standing
Grading: Grad Poly Graded
Repeatable for additional credit: No
Prerequisites: Graduate Standing.