

MORE INFORMATION

have a cumulative GPA of at least 3.00. To enter the integrated sequence, a student must obtain early admission to the NIU Graduate School, and formulate a detailed plan of study, working closely with a faculty adviser.

Students in this sequence must satisfy all the requirements of the undergraduate industrial and systems engineering curriculum with the exception that 9 semester hours of graduate credit may be included during the student's final undergraduate semester. These hours must be approved by the department.

Fields of Interest

System Analysis/Operations in ISYE Research

Mathematical and statistical modeling of systems and processes to plan, design, improve, optimize, and control them.

Production Management

Production planning, project management, inventory control, facilities planning and design, and quality control.

Manufacturing Systems

Material processing and fabrication, material handling, robotics, automated measurement, and computer-aided manufacturing.

Human Factors (Ergonomics)

The analysis of human performance, work measurement, workplace design, and human-machine systems.

Lean Six Sigma

Applying principles of lean production and Six Sigma in manufacturing and service plants. Lean manufacturing and Six Sigma methodology has become a key component of successful production systems.

Health Systems Engineering

Applying systems engineering tools, information technologies, operations management, and health sciences to advance the IOM (Institute of Medicine) quality aims for a 21st century healthcare system.

Supply Chain

Tools for the effective design and management of supply chain systems. Includes logistics strategies, network design, and supply chain integration.

Faculty

Ehsan Asoudegi

Ph.D., West Virginia University, 1987; Assistant Professor

Shi-Jie (Gary) Chen

Ph.D., State University of New York at Buffalo, 1999; Associate Professor

Purushothaman Damodaran

Ph.D., Texas A & M University, 2002; Associate Professor

Omar Ghrayeb

Ph.D., New Mexico State University, 2000; Department Chair, Associate Professor

Sukgon Kim

Ph.D., Purdue University, 2007; Assistant Professor

Murali Krishnamurthi

Ph.D., Texas A&M University, 1988; Professor

Richard Marcellus

Ph.D., University of Michigan, 1983; Associate Professor

Reinaldo Moraga

Ph.D., University of Central Florida, 2002; Associate Professor



CONTACT

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Northern Illinois University

**GRADUATE STUDY
INDUSTRIAL AND SYSTEMS
ENGINEERING**

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ABOUT THE PROGRAM

The Department of Industrial and Systems Engineering offers an M.S. degree with a major in industrial and systems engineering. Students may choose to pursue the degree culminating in a thesis (to develop research abilities in industrial engineering), a project (to prepare for advanced practice in industrial and systems engineering), or a master's paper.

Career Opportunities

Industrial and systems engineers are employed in a broad variety of organizations, including manufacturing industries, utilities, transportation, health care systems, financial institutions, and all levels of government agencies.

Students with a baccalaureate degree in engineering or science or other disciplines are encouraged to consider graduate study in industrial engineering.

Requirements

The student must submit to the department, with the help of a faculty adviser, a program of courses which must be approved by the student's graduate committee. The student must complete at least 31 semester hours of graduate-level course work, of which at least 50 percent must be in 600-level courses, excluding ISYE 699A, ISYE 699B, or ISYE 698.

At the discretion of the department, a maximum of 9 semester hours of graduate-level credit from other accredited institutions may be accepted for graduate credit towards the requirements of the degree.

If a student has completed a 400-level course for undergraduate credit at NIU with a grade of B or better, that course may not be retaken for graduate credit to be applied to the M.S. program in industrial and systems engineering.

Students in this program may apply 12 semester hours of courses earned in a Certificate of Graduate Study from any department in the College of Engineering and Engineering Technology. The program

requires proficiency in statistics and computer programming. To achieve this proficiency, students must have course work in statistics and computer programming, such as ISYE 335, STAT 350, or UBUS 223, as well as CSCI 240 or OMIS 351, or alternatives approved by the department chair.



Thesis Option

Complete 1 semester hour of ISYE 695, Graduate Seminar, 12 semester hours of industrial and systems engineering courses, 12 additional semester hours of graduate course work, as approved by the department, and 6 semester hours of thesis, ISYE 699A, on a topic approved by the student's graduate committee. The thesis must be satisfactorily defended at an oral examination. A portion of the research required by ISYE 699A may be performed in off-campus facilities if approved by the student's graduation committee.

Non-Thesis Option

Graduate Project

Complete 1 semester hour of ISYE 695, Graduate Seminar, 18 semester hours of industrial and systems engineering courses, including 3 semester hours of graduate project, ISYE 699B, on a topic approved by the student's adviser, and 12 semester hours of graduate courses, as approved by the department.

Master's Paper

Complete 1 semester hour of ISYE 695, Graduate Seminar, 18 semester hours of industrial and systems engineering courses, excluding 1 semester hour of Master's Paper, ISYE 698, on a topic approved by the student's adviser, and 12 semester hours of graduate courses, as approved by the department.

Certificates of Graduate Study

Outside Department: Courses taken to meet the requirements of any CEET certificate may be applied toward an M.S. degree in industrial and systems engineering as long as all the other requirements of the degree are met.

Integrated Manufacturing Systems (12)

A course of study that develops expertise in design and control of integrated manufacturing systems.

Four of the following (12)

- ISYE 540, Production Planning and Control (3)
- ISYE 550, Integrated Manufacturing Systems (3)
- ISYE 560, Facilities Planning and Design (3)
- ISYE 580, Simulation Modeling and Analysis (3)
- ISYE 582, Engineering Information Systems (3)
- ISYE 640, Advanced Prod. & Inventory Control (3)
- ISYE 650, Advanced Manufacturing Systems (3)

Quality Control of Manufacturing Processes (12)

A course of study that develops expertise in statistical process control and reliability analysis.

Four of the following (12)

- ISYE 530, Quality Control (3)
- ISYE 531, Reliability Engineering (3)
- ISYE 555, Manufacturing Metrology (3)
- ISYE 630, Advanced Quality Control (3)
- ISYE 631, Advanced Reliability Engineering (3)



Lean Six Sigma (12)

A course of study that equips students with advanced skills required in manufacturing and service plants that apply the principles of lean production and Six Sigma. Lean production and Six Sigma methodology has become a key component of successful production systems.

Four of the following (12)

- ISYE 535, Experimental Design for Engineering (3)
- ISYE 539, Six Sigma Performance Excellence and Modern Problem Solving (3)
- ISYE 630, Advanced Quality Control (3)
- ISYE 650, Advanced Lean Manufacturing Systems (3)

Logistics (12)

A course of study that equips graduate students with advanced skills required to effectively manage a supply chain and its constituents. Effective management of supply chain and its constituents is important to effectively and efficiently compete in global economy.

Four of the following (12)

- ISYE 540, Production Planning and Control (3)
- ISYE 550, Lean Manufacturing Systems (3)
- ISYE 560, Facilities Planning and Design (3)
- ISYE 561, Warehousing and Distribution Systems (3)
- ISYE 566, Analysis and Design of Supply Chain Systems (3)
- ISYE 574, Scheduling and Logistics (3)
- ISYE 660, Facilities and Location Analysis (3)

“Our Success is a Reflection of Your Success”

Integrated B.S./M.S. Sequence

This plan is open to all industrial and systems engineering majors who have finished at least 90 semester hours of undergraduate work and