Industrial, Systems, and Manufacturing Engineering

The industrial, systems, and manufacturing engineering (ISME) department at WSU takes responsibility for instruction and research in design, analysis and operation of manufacturing and other integrated systems of people, material, equipment and capital. The department offers curricula and educational experience designed and continuously improved through the involvement and contribution of its constituents: students and alumni, potential employers of program graduates, and faculty.

The ISME department offers two undergraduate degree programs, one in industrial engineering (BSIE) and another in product design and manufacturing engineering (BSPDME). These engineering degree programs are accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

The department also offers three graduate degree programs: Master of Engineering Management (MEM), MS in Industrial Engineering (MSIE), and PhD in industrial engineering. Both the MSIE and PhD programs allow concentrations in operations research, systems, production and supply chain analytics, quality and reliability, manufacturing engineering, and human systems engineering. The MEM program is geared toward helping engineers/technologists develop planning, decision-making and managerial skills while receiving advanced technical knowledge.

The department also offers graduate certificate programs in the following areas: enterprise systems & supply chain management, foundations of six sigma & quality improvement, lean systems, and systems engineering & management.

Modern, well-equipped laboratories are available to supplement classroom theory in ergonomics, manufacturing engineering and computer analysis. The department’s laboratory facilities include Manufacturing Processes Lab, CAD/Systems Lab, Metrology Lab, Reliability Lab, Ergonomics Lab, Rapid Prototyping and Product Development Lab, Sustainable Engineered Systems, and Open Computing Lab. Students in the academic programs offered by the ISME department get ample opportunity to work on real-life problems in local industries as part of course requirements.

Bachelor of Science Degree in Industrial Engineering

Industrial Engineers (IEs) apply scientific knowledge to solve problems in manufacturing and other industries, businesses and institutions, focusing on productivity improvement through better use of human resources, financial resources, natural resources, and man-made structures and equipment. IEs apply a full range of analytical, simulation and experimentation tools to problems in designing, planning, implementing and operating systems. These problems are found in a wide variety of service organizations (such as banks, hospitals, social services and government agencies), project-based firms (such as construction and consulting), and product-based firms (such as processing, manufacturing and electronics). The focus of industrial engineering is systems integration and improvement.

Program Educational Objectives

The educational objectives of the industrial engineering program are driven by WSU’s mission as an urban university. Industrial engineering graduates are expected, within three to five years after graduation, to meet the following Program Educational Objectives (PEOs):

- PEO1: Be employed in jobs related to designing, modeling, analyzing and managing modern complex systems, implementing and improving systems in manufacturing and service sectors at local, regional, national and global levels.
- PEO2: Have engaged in life-long learning, such as graduate studies and research, certification from professional organizations, Fundamentals of Engineering certification, or active participation in professional societies/activities.
- PEO3: Demonstrate professional success as evidenced by, among other things, increased job responsibilities and leadership role at the place of employment and in greater society.

Bachelor of Science Degree in Product Design and Manufacturing Engineering

The Product Design and Manufacturing Engineering program prepares students to engineer products as well as their production, in an integrated manner. The goal of design and manufacturing activities is the cost-effective conversion of raw materials and intermediate products into higher value products through the use of various design, processing, assembly, automation and mass-production techniques. Students in this program learn to appreciate and use the relationships between design, materials selection, processing, productivity, quality and cost to enhance profitability. The strength of this program is its curriculum in three areas — materials and processes, product engineering and assembly, and manufacturing quality and productivity — with an emphasis on aviation in course materials, projects and a capstone design project. Graduates of this program can apply their broad and comprehensive skills in a wide spectrum of industries.

Program Educational Objectives

The educational objectives of the product design and manufacturing (PDM) engineering program are driven by WSU’s mission as an urban university. PDM engineering graduates are expected, within three to five years after graduation, to meet the following Program Educational Objectives (PEOs):

- PEO1: Be employed in jobs related to designing, modeling, analyzing and managing modern complex systems, implementing and improving systems in manufacturing sectors at local, regional, national and global levels.
- PEO2: Have engaged in life-long learning, such as graduate studies and research, certification from professional organizations, Fundamentals of Engineering certification, or active participation in professional societies/activities.
- PEO3: Demonstrate professional success as evidenced by, among other things, increased job responsibilities and leadership role at the place of employment and in greater society.

Dual/Accelerated Bachelor’s to Master’s Degree Program

The department of industrial, systems, and manufacturing engineering offers a dual/accelerated bachelor’s to master’s degree program in both industrial engineering, and product design and manufacturing engineering.

The accelerated program offers outstanding students the opportunity to pursue both the bachelor’s and master’s degrees in a parallel and coordinated program. Students in the program are guided by the graduate coordinator and the departmental graduate committee until the BS degree is complete. Once the undergraduate degree is complete, an advisor in the area of the student’s interest is identified.
Majors in Industrial, Systems, and Manufacturing Engineering

- BS in Industrial Engineering (http://catalog.wichita.edu/undergraduate/engineering/industrial-manufacturing-engineering/industrial-engineering-bs)
- Dual/Accelerated Bachelor’s to Master’s Degree Program (http://catalog.wichita.edu/undergraduate/engineering/industrial-manufacturing-engineering/dualaccelerated-bs-to-ms)

Minors in Industrial, Systems, and Manufacturing Engineering


Courses in Industrial, Systems, and Manufacturing Engineering

- Industrial and Manufacturing Engineering (IME) (http://catalog.wichita.edu/undergraduate/courses/ime)