BS in Industrial Engineering

Industrial engineers (IEs) apply scientific knowledge to solve problems in manufacturing, service industries, businesses and institutions, and are focused on the design modeling and analysis of complex systems to achieve 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 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 design, systems integration and improvement.

Program Educational Objectives

Within a few years after graduation, industrial engineering graduates are expected to:

- Apply industrial engineering expertise to address challenges in designing, analyzing, implementing, managing and/or improving systems in manufacturing, services and emerging sectors.
- Engage in professional growth through advanced education, certifications, professional engagement and adaptation to emerging technologies and industry practices.
- Demonstrate leadership, ethical responsibility and collaboration that create value for organizations and society.

Program Requirements

The BS in industrial engineering program requires the completion of 125 credit hours for graduation, minus hours commensurate with advanced placement credit. Students may select 19 credit hours of technical electives to emphasize the study of systems engineering; supply chain and analytics; or manufacturing, robotics and automation. This allows students to specialize in a specific area of industrial engineering. Students' programs are determined by their own interests in consultation with their faculty advisors. All the prerequisite courses must have a grade that generates 2.000 or more credit points per credit hour.

In addition to meeting the requirements of the WSU General Education Program (http://catalog.wichita.edu/undergraduate/academic-information/general-education-program/) and the requirements of the College of Engineering, students must meet the specific requirements for the industrial engineering program given in the accompanying table.

Course	Title	Hours
General Education (34-35 credit hours)		
Select courses to meet General Education requirements [1]		24
General Education courses that will also meet Program Requirements		
PHIL 385	Engineering Ethics	3
CHEM 211	General Chemistry I	5
MATH 242	Calculus I	5
Mathematics/Natural Sciences		
MATH 243	Calculus II [2]	5
MATH 511	Linear Algebra	3
PHYS 313	Physics for Scientists I [2]	4
PHYS 314	Physics for Scientists II [2]	4
IME 254	Engineering Probability and Statistics I	3
Select one of the following		1
PHYS 315	University Physics Lab I	
PHYS 316	University Physics Lab II	
Major Courses [3]		
CS 211	Introduction to Programming	3-4
or MIS 310	Fundamentals of Business Application Development	
or MATH 451	Computational Mathematics Using MATLAB	
IME 222	Engineering Graphics	2
IME 222L	Graphics Lab	1
IME 255	Engineering Economy	3
IME 258	Manufacturing Methods and Materials I	3
IME 258L	Manufacturing Methods and Materials I Lab	1
IME 452	Work Systems	3
IME 524	Descriptive Analytics	3
IME 549	Industrial Ergonomics	3
IME 550	Operations Research I	3
IME 553	Production Systems	3
IME 554	Statistical Quality Control	3
IME 556	Information Systems	3
IME 563	Facilities Planning and Design	3
IME 565	Systems Simulation	3
IME 590 & IME 690	Industrial Engineering Design I and Industrial Engineering Design II	6
IME 650	Operations Research II	3
Technical Electives [4]		
Track Based Technical Electives [5]		9
Additional Technical Electives [6]		10
Total Credit Hours		**125**

1 See the requirements of the WSU General Education program (http://catalog.wichita.edu/undergraduate/academic-information/general-education-program/). Starting in fall 2021, first-year college students must take a First-Year Seminar (FYS) within their first two semesters at WSU. Required major courses may also count towards General Education requirements. Students will need to select additional electives to reach 125 credit hours required for graduation with assistance from an advisor.

2 May count as a general education course.

3 Anyone, who is already a student in the BSIE degree program at WSU, can only transfer a maximum of 9 credit hours of IME 400+ level courses to be used towards the major courses requirement.

- A written preapproval of the ISME chair is required to take courses from outside WSU.
- IME 590 and IME 690 must be taken at WSU.

4 At least 9 credit hours of technical elective courses (including track and additional electives) must be from the ISME department.

5 There are three tracks from which the students may take technical electives. At least three of the technical elective courses must be from the same track.

Track I – Manufacturing, Robotics and Automation:

- IME 425, IME 557, IME 558, IME 561, IME 625, IME 676, IME 758, IME 761, IME 762, IME 767, IME 775, IME 780AM, IME 788, ME 250 or ME 672.

Track II – Supply Chain and Analytics:

- IME 664, IME 734, IME 754, IME 755, IME 765, IME 780AL, IME 780AN, IME 783, DS 725 or IB 400.

Track III – Systems Engineering:

- IME 664, IME 749, IME 755, IME 759, IME 764, IME 767, IME 780AL or MGMT 460.

6 Other courses that may be used as technical electives:

- College of Engineering courses from other programs may also be used as technical electives with written preapproval of the ISME faculty advisor. Up to 3 credit hours of IME 481N/ IME 481P could be used as technical electives.
- Non-engineering technical electives: ACCT 210, ACCT 220, ACCT 310, ACCT 420, ACCT 430, BLAW 431, ECON 201, ECON 202, ECON 660, ENTR 310, ENTR 440, IB 333, MGMT 360, MGMT 450, MGMT 462, MGMT 463, MGMT 662, MIS 600 or MIS 605.
- Other courses with permission from the chair of the ISME department.

Applied Learning

Students in the Bachelor of Science in industrial engineering program are required to complete an applied learning or research experience to graduate from the program. The requirement can be met by completing the two-course capstone design experience consisting of IME 590 and IME 690.