

Industrial Engineering (IE)

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Program Overview

Industrial engineering and engineering management is concerned with the design, improvement, installation, and management of integrated systems of people, material, and equipment. Graduates of the program employ a set of skills that includes mathematical modeling, probability and statistics, computer science, human factors, interpersonal skills, project management, and an ability to manage and administer large technical engineering and research projects. Thus, industrial engineering and engineering management may be thought of as applied problem solving, from inception to implementation and management.

Labs and Facilities

Laboratories are available for courses in work methods and measurements, human factors, and ergonomics. To respond to changing industrial requirements, a modern computer-integrated manufacturing laboratory has been established. The major amount of laboratory activity, however, is involved in the senior design courses. As often as possible, these design projects utilize the facilities of local industries, service organizations, governmental agencies, and other types of business. In addition, modern computing facilities and up-to-date industrial software are used for many of the courses.

Curriculum

The curriculum is designed to give students a thorough knowledge in the fundamental principles within the four primary stems of industrial engineering: operations research and optimization, manufacturing, statistical processes, and human engineering. In addition, students develop an understanding of the engineering relationships with the management tasks of planning, leading, organizing, and controlling as well as the integrative nature of management systems. Throughout the program of studies, special emphasis is placed upon application of systems principles in engineering design to assure proper integration of the individual (or individuals), procedures, materials, and equipment. Service-learning components, laboratories, case work, simulations, and the capstone design sequence reinforce the managerial aspects of systems integration, systems design, and the global, societal, and business context for product and process improvement.

Curriculum Listing

Freshman Year

First Semester		
MATH 123	Calculus I	4
CHEM 112	General Chemistry I	3
Humanities or Social Sciences Elective(s)		3
PE	Physical Education	1
ENGL 101	Composition I	3
CHEM 112L	General Chemistry I Lab	1
ME 110	Intro. to Mechanical Engr	2
OR		
CEE 117	Computer Aided Design	2
TOTAL		17

Second Semester

MATH 125	Calculus II	4
PHYS 211	University Physics I	3
PE	Physical Education	1
PSYC 101	General Psychology	3
Engineering Fundamentals Elective		3
Humanities or Social Sciences Elective(s)		3
TOTAL		17

Sophomore Year

First Semester		
Engineering Fundamentals Elective		3
ENGL 279	Technical Communications I	3
MATH 225	Calculus III	4
IENG 381	Intro to Probability and Stats	3
PHYS 213	University Physics II	3
PHYS 213L	University Physics II Lab	1
TOTAL		17

Second Semester

IENG 382	Probability Theory and Stats II	3
MATH 321	Differential Equations	4
IENG 215/216/217	Cost Estimating for Engineers	3
IENG 241	Prod. Tools for Quality Improvement	2
IENG 302	Engineering Economics	3
Humanities or Social Sciences Elective(s)		3
TOTAL		18

Junior Year

First Semester		
ENGL 289	Technical Communications II	3
IENG 311	Work Methods and Measurement	3
IENG 486	Statistical Quality and Process Control	3
IENG 352	Creativity and Innovation	1
IENG 354	Marketing Technology Innovations	1
IENG 362	Stochastic Models	3
Humanities or Social Sciences Elective(s)		1
Professional Breadth Elective		3
TOTAL		18

Second Semester

IENG 355	Financing Technology Innovations	1
IENG 441	Simulation	3
MATH 353	Linear Optimization	3
IENG 321	Ergonomics/Human Factors Engineering	3
Engineering Fundamentals Elective		3
Professional Breadth Elective		3
TOTAL		16

Senior Year

First Semester		
IENG 425	Production and Operation	3
IENG 331	Safety Engineering	3
IENG 471	Facilities Planning	3
IENG 464	Senior Design Project I	2
IENG 462	Ind. and Engineering Mgmt. Profession	1
Professional Breadth Elective		6
TOTAL		18

Second Semester

IENG 366	Engineering Management	3
IENG 465	Senior Design Project II	3
IENG 475	Computer Controlled Manuf.	3
Humanities or Social Sciences Elective(s)		3
Department Elective		3
TOTAL		15

136 credits required for graduation

Elective courses must be chosen to satisfy all of the following requirements:

1. Sixteen semester hours in humanities or social science. At least six hours must be in humanities and at least six hours must be in social sciences. This may include PSYC 101, which is required.
2. Six hours of humanities or social science must be included in the list of approved cultural diversity courses.
3. At least three hours of humanities or social science must be at the 300 or 400 level.