# INDUSTRIAL ENGINEERING
## 124-126 Semester Hours

### LOWER DIVISION COURSES

**FRESHMAN YEAR**

| FALL | | | Cr | SPRING | | | Cr |
|---|---|---|---|---|---|---|---|
| *FST | 101 | Succeeding & Engaging at SIUE | 1 | ENG | 102 | English Composition II[3] | 3 |
| IE | 106 | Engineering Problem Solving | 3 | MATH | 152 | Calculus II (BPS) | 5 |
| CHEM | 131 | Engineering Chemistry[+](BPS) | 4 | PHYS | 141 | Physics I for Engr.[++](BPS) | 3 |
| CHEM | 135 | Engineering Chemistry[+] Lab(EL) | 1 | PHYS | 151L | University Physics I Lab[++] (EL) | 1 |
| ENG | 101 | English Composition I[1] | 3 | ACS | 103 | Interpersonal Communication Skills[4] (EUSC) | 3 |
| MATH | 150 | Calculus I[2](QR) | 5 | | | | |
| | | | **17** | | | | **15** |

**SOPHOMORE YEAR**

| FALL | | | Cr | SPRING | | | Cr |
|---|---|---|---|---|---|---|---|
| CE | 204 | Engr. Graphics & CAD | 3 | CE | 242 | Mechanics of Solids | 3 |
| CE | 240 | Statics | 3 | CS | 140 | Intro to Computing | 3 |
| MATH | 250 | Calculus III (BPS) | 4 | ECE | 210 | Intro to Electric Circuits | 3 |
| PHYS | 142 | Physics II for Engr. [++] (BPS) | 3 | MATH | 305 or 321 | Differential Equations I or Linear Algebra I (BPS) | 3 |
| PHYS | 152L | University Physics Lab II[++] (EL) | 1 | ECON | 111 | Macroeconomics (BSS) | 3 |
| | | | **14** | | | | **15** |

Admission to upper-division courses requires satisfactory completion of lower–division core courses (see catalog for specific requirements). An "APPLICATION FOR ADMISSION TO UPPER-DIVISION ENGINEERING COURSES" form must also be completed and approved. This form is available online and in the Engineering Student Services Office.

### UPPER DIVISION COURSES

**JUNIOR YEAR**

| FALL | | | Cr | SPRING | | | Cr |
|---|---|---|---|---|---|---|---|
| IE | 335 | Intro to Info Processing Systems | 3 | IE | 415 | OR – Deterministic Models | 3 |
| IE | 345 | Engineering Econ. Analysis | 3 | IE | 451 | Methods Design & Work Meas. | 3 |
| STAT | 380 | Stats for Applications (BICS) | 3 | IE | 465 | Design & Control of Quality System | 3 |
| IE | 370 | Manufacturing Processes | 3 | IE | 470 | Manufacturing Systems | 3 |
| IE | 375 | 3-D Modeling in Product Design | 3 | Breadth-Life Science (BLS)[5] | | | 3 |
| Breadth Fine & Performing Arts (BFPA) | | | 3 | Health Experience (EH)[5] | | | 0/2 |
| | | | **18** | | | | **15/17** |

**SENIOR YEAR**

| FALL | | | Cr | SPRING | | | Cr |
|---|---|---|---|---|---|---|---|
| IE | 468 | OR – Simulation | 3 | IE | 490 | Integrated Engineering Design | 3 |
| IE | 476 | Plantwide Process Control | 3 | IE | XXX | IE Elective II | 3 |
| IE | 483 | Production Planning & Control | 3 | IE | XXX | IE Elective III | 3 |
| IE | 484 | Facilities Planning | 3 | PHIL | 323 | Engineering, Ethics & Professionalism (BHUM)[6] | 3 |
| IE | XXX | IE Elective I | 3 | IS | 3XX | Interdisciplinary Studies (IS)[7](EGC)[7](EUSC)[7] | 3 |
| | | | **15** | | | | **15** |

**Declaration of Major:** Students interested in any of the majors offered by the School of Engineering should seek advisement from the School of Engineering when they initially enroll in the University and should declare a major as soon as possible. Students admitted to programs offered by the School of Engineering shall have met University admission requirements, successfully completed any required academic development and high school deficiency courses, eligibility to enroll in MATH 125 – Pre-Calculus, and have a cumulative GPA of 2.0 or better in any completed University course work.

**SEE REVERSE SIDE FOR ADDITIONAL INFORMATION.**
**FOR MORE INFORMATION CONTACT:**
**THE INDUSTRIAL ENGINEERING OFFICE: (618) 650-5589.**

*FST 101 – for first time freshmen only. Must be taken in the first semester.

[+]CHEM 121A and CHEM 125A are acceptable substitutes in lieu of CHEM 131and CHEM 135.

[++]Physics I for Engineering - co-requisites: MATH 152 and PHYS 151L. Prerequisites: ACT Math subscore of 28 or higher *or* high school physics grade of B or higher *or* Physics Readiness Exam Score 09 *or* PHYS 140.

[++]Physics II for Engineering - prerequisites: PHYS 141 with a grade of C or higher *or* PHYS 151 with a grade of C or higher; MATH 152 with a grade of C or higher; PHYS 151L with a grade of C or higher.

[1]ENG 101 must be successfully completed within the First 30 Hours.

[2]Quantitative Reasoning (QR) 101 must be successfully completed within the First 60 Hours. MATH 150 successfully completed (with a grade of 'C' or better) will fulfill this requirement.

[3]ENG 102 must be successfully completed within the First 45 Hours.

[4]ACS 103 must be successfully completed within the First 30 Hours. ACS 103 can be used as a Foundations course, and will also fulfill the EUSC requirement. If ACS 101 is taken instead of ACS 103, the EUSC requirement will have to be met by another appropriate course.

[5]Students may be able to complete the Health Experience (EH) as an approved project or activity; if so, an additional course is not needed. (See academic advisor for approved project or activity). In addition, *BIOL 203 or *BIOL 205 will fulfill a BLS and EH requirement. *Prerequisite/s required courses.

[6]PHIL 323 will fulfill the RA 101 requirement.

[7]Interdisciplinary Studies (IS) Courses must be taken at the junior/senior level class standing. This requirement is not waived with completion of transfer associate degree or IAI-GECC. It is recommended that students choose a course to meet this general education requirement and Global Cultures (EGC). Selecting one of the following: IS 324, 326, 336, 340, *352*, 353, 363, *375*, 377, 400 or 401 will satisfy both the requirement of an IS course and the GLOBAL CULTURES (GC) requirements. In addition, IS 352 and 375 will fulfill the EGC, EUSC and IS requirements. If a course is not selected that meets two general education requirements, then a course from the list of GC courses must also be taken.

**Enrollment in Upper-Division IE Courses**:
The requirements for enrollment in upper-division IE courses are: satisfactory completion of all university and School of Engineering admission requirements; satisfactory completion of English, speech, chemistry, mathematics, and physics courses shown in the first two years of the program with a GPA of 2.0 for non-transfer students, transfer students from articulated programs, and Illinois resident transfer students (2.25 for other transfer students); a GPA of 2.0 or better in CS 140, CE 204, CE 240, ECE 210, and CE 242 (both original and repeat grades are computed in the GPA); and an approved application for enrollment in upper-division engineering courses.

**INDUSTRIAL ENGINEERING ELECTIVES**

Not all elective courses are offered every year. The courses to be offered are selected from the list below on the basis of student demand and faculty availability. Elective courses have 1.5 hours of design as a minimum.
Three required electives must come from the following list, with at least two electives from the IE classification:

| Approved List of IE Electives | | | Cr. | FALL | SPRING | SUMMER |
|---|---|---|---|---|---|---|
| IE | 401 | Biomechanics | 3 | X | | |
| IE | 427 | Knowledge-Based Systems | 3 | | X | X |
| IE | 430 | Managing Engineering and Technology | 3 | | | X |
| IE | 431 | Project Analysis and Control | 3 | | | X |
| IE | 445 | Foundations of Financial Engineering | 3 | X | | |
| IE | 458 | Human Factors Engineering | 3 | X | | |
| IE | 461 | OR – Stochastic Models | 3 | | X | |
| IE | 462 | Six Sigma, Quality and Process Improvement | 3 | X | | |
| IE | 463 | Reliability Engineering | 3 | X | | |
| IE | 464 | Design of Experiments with Applications | 3 | | X | |
| IE | 466 | Engineering Metrology | 3 | X | | |
| IE | 467 | Total Quality and Taguchi Methods | 3 | | X | |
| IE | 475 | CAD/CAM/CAE | 3 | | X | |
| IE | 477 | Computer Integrated Mfg. Systems | 3 | | X | |
| IE | 478 | Industrial Robotics | 3 | | X | X |
| IE | 480 | Tool Engineering | 3 | X | | |
| IE | 482 | Manufacturing Engineering Design | 3 | | X | |
| IE | 488 | Lean Production | 3 | | X | |

For all other approved technical electives, please see the program director for details as these tend to change from time to time.
**For the Manufacturing Engineering specialization, please choose three electives from the following list of courses. Other

**EVENING AND SECOND COURSE OFFERINGS**

IE courses are offered during either the Fall or Spring Semester as shown on the reverse side of this page. Additional offerings of many IE courses are available as shown below. (The department reserves the right to cancel these offerings because of lack of student demand or faculty availability.)

| Courses with Evening Offerings | | | Cr. | FALL | SPRING | SUMMER |
|---|---|---|---|---|---|---|
| CE | 204 | Engineering Graphics & CAD | 3 | X | X | X |
| CE | 240 | Statics | 3 | X | X | X |
| CE | 242 | Mechanics of Solids | 3 | X | X | X |
| ECE | 210 | Introduction to Electric Circuits | 3 | X | X | X |
| IE | 345 | Engineering Economic Analysis | 3 | X | X | X |
| IE | 375 | 3-D Modeling in Product Design | 3 | X | X | |
| IE | 427 | Knowledge-Based Systems | 3 | | X | X |
| IE | 430 | Managing Engineering and Technology | 3 | | | X |
| IE | 431 | Project Analysis and Control | 3 | | | X |
| IE | 458 | Human Factors Engineering | 3 | X | | |

**Minor Requirements:**
21 hours are required, including IE 345, 370, 415, 451 and STAT 380. The remaining two courses are electives to be selected from the following four courses: IE 458, 468, 483 and 484. Other substitute electives are subject to approval by the Program Director of Industrial and Manufacturing Engineering.

**University Requirements (Non-General Education)**

- **Bachelor of Science Degree Requires completion of 8 lecture courses in life (BLS* or LS*), physical (BPS* or PS*) or social science (BSS* or SS*) including 2 with labs (EL*)**
- **Minimum of 120 semester hours must be completed.**
- **Minimum GPA of 2.0 must be achieved.**