

University of Wisconsin – Milwaukee
College of Engineering and Applied Science
INDUSTRIAL ENGINEERING CURRICULUM

The minimum number of credits required to complete the Bachelor of Science in Engineering with a major in Industrial Engineering is 125 credits. Students who need background preparation courses may need additional credits. See information below regarding placement examinations.

Engineering Core Courses (26 credits)

	<u>Credits</u>	<u>Prerequisite</u>	
EAS 100	CEAS Freshman Orientation (recommended only)	1	None
EAS 200	Professional Seminar	1	None
Ind Eng 111 ¹	Introduction to Engineering	3	Math 116(C), Admission to CEAS
Ind Eng 112 ¹	Engineering Drawing & CAD/Drafting	3	Math 116, Admission to CEAS
Ind Eng 360	Engineering Economic Analysis	3	Jr St
Civ Eng 201	Statics	3	Math 232
Civ Eng 202	Dynamics	3	Civ Eng 201, Math 233(C)
CompSci 240	Introduction to Engineering Programming	3	Math Placement or Math 116
ElecEng 301	Electrical Circuits I	3	Physics 210(C)
MatlEng 201	Engineering Materials	4	Chem 102 or 105

¹MechEng 110 & 111 may substitute for Ind Eng 111 & 112 for transferring students.

Industrial Engineering Major (36 credits)

Ind Eng 350	Manufacturing Processes	3	MatlEng 201
Ind Eng 367	Intro Statistics for Physical Sciences & Engineering	3	B- or better Math 211 or 213; C or better Math 221 or 231
Ind Eng 370	Introduction to Operations Analysis	3	Math 233
Ind Eng 455	Operations Research I	3	Jr St, Math 233
Ind Eng 465	Operations Research II	3	Jr St, Ind Eng 367
Ind Eng 470	Methods Engineering	3	Jr St, Ind Eng 367
Ind Eng 475	Simulation Methodology	3	CompSci 201(C), Ind Eng 367
Ind Eng 485	Senior Design Project	3	Sr St, Ind Eng 370, 455, 475, 465(C) 470(C), 571(C), 580(C), 583(C)
Ind Eng 571	Quality Control	3	Jr St, Ind Eng 367
Ind Eng 575	Design of Experiments	3	Ind Eng 367
Ind Eng 580	Ergonomics	3	Jr St
Ind Eng 583	Facility Layout & Material Handling	3	Sr St, Ind Eng 370, 455(C)

Mathematics (14-16 credits)

One of the following Calculus sequences must be completed:		(16 credits typical: Math 231,232,233, ElecEng 234)	
Math 231-232-233 grade	12	Math placement score, or previous course with at least "C"	
Math 221- 222 (Honors)	10		
And ElecEng 234 Analytical Methods in Engineering	4	Math 232*	

Natural Science Requirement (16-18 credits)

Chem 102-104 or	10	Chem 100* or Chemistry Placement; Math 105* or 108*
Chem 105 and	5	
Approved Natural Science Elective ** (minimum 3 cr)	3	
Physics 209 – 210	8	Physics 209: Math 232(C) Physics 210: Math 233(C), C- or better in Physics 209

General Education Requirements

Distribution Requirements (15 credits)

Art	3		
Humanities	3		
Social Science	6		
English 310	Writing, Speaking & Technoscience in the 21 st Century	3	English Competency

Cultural Diversity – One of the arts, humanities, or social science courses selected must also meet the UWM cultural diversity requirement.

Free Elective

4

Competency Requirements

English Composition (0-6 credits)

The English Composition requirement is satisfied by:

- Earning a satisfactory score on the English placement test, **or**
- Earning a grade of C or higher in English 102, **or**
- Transferring a grade of C or better in a course equivalent to English 102 or higher level expository writing course

Foreign Language (0-8 credits) (for new freshman starting fall 1999)

The foreign language requirement can be completed with one of these options:

- Two years of a single foreign language in high school
- Two semesters of a single foreign language in college
- Demonstrate ability by examination

***C or better in prerequisite**

(C) Concurrent Enrollment in Designated Course

Admission to Major: 1. Complete Math 231 (or 221) with C or better grade. 2. Complete the English composition requirement (OWCA) 3. Complete Chem 100 with C or better grade or satisfactory placement score. 4. Obtain a minimum GPA as set by the department. A 3.00 GPA guarantees admission to any CEAS major. Courses may be repeated only once. No more than two courses may be repeated.

The program may impose major status as a prerequisite for courses numbered 200 or above.

Placement Examinations: Students without previous college level credits in Math, Chemistry or English may be required to take placement exams. The results of these tests determine the appropriate course in which to register. Background prerequisite courses may be required in addition to the courses listed above.

Technical Electives – Industrial Engineering Major

The Industrial Engineering program requires a total of 12 credits of technical electives, chosen from the following list. At least 6 credits must be in courses from Ind Eng. All non-required IND ENG courses numbered between 400 and 699 are approved technical electives.

	<u>Credits</u>	<u>Prerequisite</u>
Ind Eng 390 Senior Thesis	1- 3	Sr St, Cons Instr
Ind Eng 405 Product Realization	3	Jr St, Ind Eng 350, 360, 370
Ind Eng 550 Control of Automated Manufacturing Systems	3	Jr St, ElecEng 234, 301
Ind Eng 555 Manufacturing Systems Integration	3	Jr St, Ind Eng 450(R)
Ind Eng 572 Reliability Engineering	3	Jr St, Ind Eng 467
Ind Eng 582 Ergonomic Job Evaluation Techniques	3	Sr St, Ind Eng 580
Ind Eng 584 Biodynamics of Human Motion	3	Jr St, Civ Eng 202(C), ElecEng 234
Ind Eng 587 Lean Production Systems	3	Ind Eng 350
Ind Eng 590 Topics in Industrial & Systems Engineering	1-3	Sr St
Ind Eng 699 Independent Study	1-3	Jr St, Cons Instr
Bus Adm 330 Organizations	3	Jr St
Bus Adm 473 Business Logistic Management	3	Jr St, Bus Adm 370
EAS 001 Co-op Work Period	3 ²	Prior Cons Co-op Dir
MechEng 301 Basic Engineering Thermodynamics	3	Math 233, Physics 209
MechEng 474/ ElecEng 474 Introduction to Control Systems	4	Sr St, Civ Eng 202*, ElecEng 234*, 301

²This option is only open to students who earn **3 or more** credits of Co-Op.

Approved Natural Science Elective Courses

Atmospheric Science (100 level or above)
 Biological Sciences (150 or above)
 Physics (300 level or above)
 Conservation & Environment Studies 210
 Geosciences (100, 102, 150 or above)
 Math (240, 300 or above)

***C or better in prerequisite**

(C) Concurrent Enrollment in Designated Course

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