

INDUSTRIAL ENGINEERING, B.S. (ENGINEERING)

Begin Campus: Any Penn State Campus

End Campus: University Park

Degree Requirements

For the Bachelor of Science degree in Industrial Engineering, a minimum of 129 credits is required:

Requirement	Credits
General Education	45
Requirements for the Major	111

27 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 9 credits of GN courses; 6 credits of GQ courses; 3 credits of GS courses; 9 credits of GWS courses.

Requirements for the Major

To graduate, a student enrolled in the major must earn a grade of C or better in each course designated by the major as a C-required course, as specified by Senate Policy 82-44 (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44>).

Code	Title	Credits
Prescribed Courses		
CHEM 111	Experimental Chemistry I	1
IE 425	Stochastic Models in Operations Research	3
IE 453	Simulation Modeling for Decision Support	3
IE 460	Service Systems Engineering	3
IE 470	Manufacturing System Design and Analysis	3
IE 480W	Capstone Design Project	3
MATH 220	Matrices	2
MATH 231	Calculus of Several Variables	2
MATH 250	Ordinary Differential Equations	3
MATSE 259	Properties and Processing of Engineering Materials	3
PHYS 212	General Physics: Electricity and Magnetism	4
<i>Prescribed Courses: Require a grade of C or better</i>		
CHEM 110	Chemical Principles I	3
EDSGN 100	Cornerstone Engineering Design	3
EMCH 210	Statics and Strength of Materials	5
ENGL 202C	Effective Writing: Technical Writing	3
IE 302	Engineering Economy	3
IE 305	Product Design, Specification and Measurement	3
IE 322	Probabilistic Models in Industrial Engineering	3
IE 323	Statistical Methods in Industrial Engineering	3
IE 327	Introduction to Work Design	3
IE 330	Engineering Analytics	3
IE 405	Deterministic Models in Operations Research	3
MATH 140	Calculus With Analytic Geometry I	4
MATH 141	Calculus with Analytic Geometry II	4
PHYS 211	General Physics: Mechanics	4

Additional Courses		
Select 1 credit of First-Year Seminar		1
CMPSC 200	Programming for Engineers with MATLAB	3
or CMPSC 201	Programming for Engineers with C++	
ECON 102	Introductory Microeconomic Analysis and Policy	3
or ECON 104	Introductory Macroeconomic Analysis and Policy	
Select one of the following: ¹		3
IE 408	Cognitive Work Design	
IE 418	Human/Computer Interface Design	
IE 419	Work Design - Productivity and Safety	
<i>Additional Courses: Require a grade of C or better</i>		
CAS 100A	Effective Speech	3
or CAS 100B	Effective Speech	
ENGL 15	Rhetoric and Composition	3
or ENGL 30H	Honors Rhetoric and Composition	

Supporting Courses and Related Areas

Select 3 credits as a science selection from department list	3
Select 6 credits as non-major electives from department list ²	6
Select 3 credits in manufacturing processes from department list ¹	3
Select 6 credits of technical electives from the department list; all 6 credits must be IE credits	6

¹ The course not taken to satisfy this requirement can be taken as a technical elective. Please see the department list.

² Please see the department list.

General Education

Connecting career and curiosity, the General Education curriculum provides the opportunity for students to acquire transferable skills necessary to be successful in the future and to thrive while living in interconnected contexts. General Education aids students in developing intellectual curiosity, a strengthened ability to think, and a deeper sense of aesthetic appreciation. These are requirements for all baccalaureate students and are often partially incorporated into the requirements of a program. For additional information, see the General Education Requirements (<https://bulletins.psu.edu/undergraduate/general-education/baccalaureate-degree-general-education-program/>) section of the Bulletin and consult your academic adviser.

The keystone symbol appears next to the title of any course that is designated as a General Education course. Program requirements may also satisfy General Education requirements and vary for each program.

Foundations (grade of C or better is required and Inter-Domain courses do not meet this requirement.)

- Quantification (GQ): 6 credits
- Writing and Speaking (GWS): 9 credits

Breadth in the Knowledge Domains (Inter-Domain courses do not meet this requirement.)

- Arts (GA): 3 credits
- Health and Wellness (GHW): 3 credits
- Humanities (GH): 3 credits
- Social and Behavioral Sciences (GS): 3 credits
- Natural Sciences (GN): 3 credits

Integrative Studies

- **Inter-Domain Courses (Inter-Domain):** 6 credits

Exploration

- **GN**, may be completed with Inter-Domain courses: 3 credits
- **GA, GH, GN, GS, Inter-Domain courses.** This may include 3 credits of World Language course work beyond the 12th credit level or the requirements for the student's degree program, whichever is higher: 6 credits

University Degree Requirements

First Year Engagement

All students enrolled in a college or the Division of Undergraduate Studies at University Park, and the World Campus are required to take 1 to 3 credits of the First-Year Seminar, as specified by their college First-Year Engagement Plan.

Other Penn State colleges and campuses may require the First-Year Seminar; colleges and campuses that do not require a First-Year Seminar provide students with a first-year engagement experience.

First-year baccalaureate students entering Penn State should consult their academic adviser for these requirements.

Cultures Requirement

6 credits are required and may satisfy other requirements

- United States Cultures: 3 credits
- International Cultures: 3 credits

Writing Across the Curriculum

3 credits required from the college of graduation and likely prescribed as part of major requirements.

Total Minimum Credits

A minimum of 120 degree credits must be earned for a baccalaureate degree. The requirements for some programs may exceed 120 credits. Students should consult with their college or department adviser for information on specific credit requirements.

Quality of Work

Candidates must complete the degree requirements for their major and earn at least a 2.00 grade-point average for all courses completed within their degree program.

Limitations on Source and Time for Credit Acquisition

The college dean or campus chancellor and program faculty may require up to 24 credits of course work in the major to be taken at the location or in the college or program where the degree is earned. Credit used toward degree programs may need to be earned from a particular source or within time constraints (see Senate Policy 83-80 (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#83-80>)). For more information, check the Suggested Academic Plan for your intended program.