

ENERGY ENGINEERING, B.S.

Begin Campus: Any Penn State Campus

End Campus: University Park

Degree Requirements

For the Bachelor of Science degree in Energy Engineering, a minimum of 131 credits is required:

Requirement	Credits
General Education	45
Requirements for the Major	116

30 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 3 credits of GH courses; 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		
EE 211	Electrical Circuits and Power Distribution	3
EGEE 12	Energy Science and Engineering Lectures	1
FSC 431	The Chemistry of Fuels	3
FSC 432	Petroleum Processing	3
MATH 251	Ordinary and Partial Differential Equations	4
MATSE 201	Introduction to Materials Science	3
PHIL 103	Ethics	3
<i>Prescribed Courses: Require a grade of C or better</i>		
CHEM 110	Chemical Principles I	3
CHEM 111	Experimental Chemistry I	1
CHEM 112	Chemical Principles II	3
EGEE 302	Principles of Energy Engineering	3
EGEE 304	Heat and Mass Transfer	3
EGEE 411W	Energy Science and Engineering Lab	3
EGEE 430	Introduction to Combustion	3
EGEE 438	Wind and Hydropower Energy Conversion	3
EGEE 437	Design of Solar Energy Conversion Systems	3
EGEE 441	Electrochemical Engineering Fundamentals	3
EGEE 451	Energy Conversion Processes	3
EGEE 464W	Energy Design Project	3
EME 301	Thermodynamics in Energy and Mineral Engineering	3
EME 303	Fluid Mechanics in Energy and Mineral Engineering	3
EMSC 100S	Earth and Mineral Sciences First-Year Seminar ¹	3
ENGL 202C	Effective Writing: Technical Writing	3
MATH 140	Calculus With Analytic Geometry I	4
MATH 141	Calculus with Analytic Geometry II	4

MATH 231	Calculus of Several Variables	2
PHYS 211	General Physics: Mechanics	4
PHYS 212	General Physics: Electricity and Magnetism	4

Additional Courses

CHEM 202	Fundamentals of Organic Chemistry I	3
or CHEM 210	Organic Chemistry I	
EME 460	Geo-resource Evaluation and Investment Analysis	3
or IE 302	Engineering Economy	

Select 3 credits of the following: 3

EBF 200	Introduction to Energy and Earth Sciences Economics	
ECON 14	Principles of Economics	
ECON 102	Introductory Microeconomic Analysis and Policy	

Additional Courses: Require a grade of C or better

CMPSC 200	Programming for Engineers with MATLAB	3
or CMPSC 201	Programming for Engineers with C++	

EGEE 494	Research Project	2
or EGEE 295/395/495	Internship	

ENGL 15	Rhetoric and Composition	3
or ENGL 30H	Honors Rhetoric and Composition	

Supporting Courses and Related Areas

Select 3 credits of EGEE electives from an approved list in consultation with an adviser 3

Select 6 credits of professional courses from an approved list in consultation with an adviser. Other substitutions outside the approved list must be approved by petition. 6

Select 6 credits of technical electives from a broad list of energy related courses across colleges at Penn State. A list of suggested courses from energy-related departments at Penn State is provided. (Students may apply 6 credits of ROTC to some of the elective choices.) 6

¹ The following substitutions are allowed for students attending campuses where the indicated course is not offered: CAS 100 can be substituted for EMSC 100S.

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, GHW, 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.