

ELECTRICAL ENGINEERING, B.S. (CAPITAL)

Seven Penn State campuses are scheduled for closure after Spring 2027: DuBois, Fayette, New Kensington, Mont Alto, Shenango, Wilkes-Barre, and York. New students are not being admitted at these campuses.

Begin Campus: Any Penn State Campus

End Campus: Harrisburg

Degree Requirements

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

Requirement	Credits
General Education	45
Requirements for the Major	111-115

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; 6 credits of GS courses; 6 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/students/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/>).

Code	Title	Credits
Prescribed Courses		
CHEM 111	Experimental Chemistry I	1
CMPEN 372	Microcontrollers	3
EE 311	Electronic Circuit Design II	3
EE 330	Engineering Electromagnetics	4
EE 341	Semiconductor Device Principles	3
EE 385	Energy Systems and Electric Machines	3
EE 461	Communications I	4
EE 481	Control Systems	4
ENGR 320Y	Design for Global Society	3
MATH 220	Matrices	2-3
PHYS 213	General Physics: Fluids and Thermal Physics	2
PHYS 214	General Physics: Wave Motion and Quantum Physics	2
SSET 295	Internship	1
<i>Prescribed Courses: Require a grade of C or better</i>		
CHEM 110	Chemical Principles I	3
CMPEN 271	Introduction to Digital Systems	3
CMPEN 275	Digital Design Laboratory	1
EE 210	Circuits and Devices	4
EE 310	Electronic Circuit Design I	4
EE 317	Circuit Design Tools and Data Acquisition	3
EE 352	Signals and Systems: Continuous and Discrete-Time	4
EE 405	Capstone Proposal Preparation	1-3

EE 406W	Electrical Engineering Capstone Design	3
ENGL 202C	Effective Writing: Technical Writing	3
MATH 140	Calculus With Analytic Geometry I	4
MATH 141	Calculus with Analytic Geometry II	4
PHYS 211	General Physics: Mechanics	4
PHYS 212	General Physics: Electricity and Magnetism	4
Additional Courses		
EDSGN 100S	Introduction to Engineering Design	3
or EDSGN 100 Cornerstone Engineering Design		
MATH 230	Calculus and Vector Analysis	4
or MATH 231 Calculus of Several Variables and Integral Vector Calculus		
MATH 250	Ordinary Differential Equations	3-4
or MATH 251 Ordinary and Partial Differential Equations		
Select 3 credits from the following:		3
CMPSC 121	Introduction to Programming Techniques	
CMPSC 131	Programming and Computation I: Fundamentals	
CMPSC 201	Programming for Engineers with C++	
Select 3 credits from the following:		3
ECON 14	Principles of Economics	
ECON 102	Introductory Microeconomic Analysis and Policy	
ECON 104	Introductory Macroeconomic Analysis and Policy	
Select 3 credits from the following:		3
EE 465	Probability for Electrical and Computer Engineers	
STAT 318	Elementary Probability	
STAT 401	Experimental Methods	
STAT 414	Introduction to Probability Theory	
STAT 418	Introduction to Probability and Stochastic Processes for Engineering	
<i>Additional Courses: Require a grade of C or better</i>		
CAS 100A	Effective Speech	3
or CAS 100S Effective Speech		
Supporting Courses and Related Areas		
<i>Technical Electives</i>		
Select 9 credits in consultation with an academic adviser and in support of the student's interests.		9
EE 410	Linear Electronic Design	
EE 413	Power Electronics	
EE 416	Digital Integrated Circuits	
EE 417	Digital Design Using Field Programmable Devices	
EE 421	Optical Fiber Communications	
EE 432	RF and Microwave Engineering	
EE 434	Introduction to Signal Integrity for Interconnects	
EE 442	Solid State Devices	
EE 453	Fundamentals of Digital Signal Processing	
EE 456	Introduction to Neural Networks	
EE 458	Digital Image Processing and Computer Vision	
EE 460	Communication Systems II	
EE 480	Linear Systems: Time Domain and Transform Analysis	
EE 483	Introduction to Automation and Robotics Systems	
EE 488	Power Systems Analysis I	
EE 489	Power Systems Analysis II	

EE 497 Special Topics

Up to 3 credits of the courses listed below may be taken to satisfy the technical electives requirement. 400-level courses not included on the list below may be used with approval of the program.

BME 402 Biomedical Instrumentation and Measurements

BME 403 Biomedical Instrumentation Laboratory

CMPSC 436 Communications and Networking

PHYS 458 Intermediate Optics

PHYS 462 Applications of Physics in Medicine

SSET 495 Internship

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/students/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/>)). For more information, check the Suggested Academic Plan for your intended program.