

COMPUTER ENGINEERING, B.S. (ENGINEERING)

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: University Park

Degree Requirements

For the Bachelor of Science degree in Computer Engineering, a minimum of 127 credits is required:

Requirement	Credits
General Education	45
Requirements for the Major	106-108

24 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; 9 credits of GWS courses. The remaining 21 General Education credits must be distinct from the Requirements for the Major.

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		
CMPEN 362	Communication Networks	3
CMPEN 482W	Computer Engineering Project Design	3
MATH 231	Calculus of Several Variables	2
PHYS 214	General Physics: Wave Motion and Quantum Physics	2
<i>Prescribed Courses: Require a grade of C or better</i>		
CHEM 110	Chemical Principles I	3
CMPEN 431	Introduction to Computer Architecture	3
CMPSC 150N	Computing and Society	3
CMPSC 221	Object Oriented Programming with Web-Based Applications	3
CMPSC 222	Advanced Data Structures and Algorithms in C	3
CMPSC 315	Computer Systems I	4
CMPSC 316	Computer Systems II	4
CMPSC 360	Discrete Mathematics for Computer Science	3
CMPSC 465	Data Structures and Algorithms	3
EE 210	Circuits and Devices	4
EE 310	Electronic Circuit Design I	4
EE 353	Signals and Systems: Continuous and Discrete-Time	3
PHYS 211	General Physics: Mechanics	4
PHYS 212	General Physics: Electricity and Magnetism	4

Additional Courses

Select 1 credit of First-Year Seminar	1
STAT/MATH 418 Introduction to Probability and Stochastic Processes for Engineering	3
or STAT 414 Introduction to Probability Theory	
Select 6 credits from the following:	6
CMPEN 411 VLSI Digital Circuits	
CMPEN 416 Digital Integrated Circuits	
CMPEN 417 Digital Design Using Field Programmable Devices	
CMPEN 454 Fundamentals of Computer Vision	
CMPEN 455 An Introduction to Digital Image Processing	
CMPEN 462 Wireless Communications Systems and Security	
CMPEN 472 Microprocessors and Embedded Systems	
CMPEN 473 Microcomputer Laboratory	
CMPEN 475 Functional Verification	
EE 453 Fundamentals of Digital Signal Processing	
EE 456 Introduction to Neural Networks	
Select 6 credits from any 400-level CMPEN or CMPSC course	6
<i>Additional Courses: Require a grade of C or better</i>	
CMPSC 121 Introduction to Programming Techniques	3
or CMPSC 131 Programming and Computation I: Fundamentals	
CMPSC 122 Intermediate Programming ¹	3
or CMPSC 132 Programming and Computation II: Data Structures	
ENGL 202C Effective Writing: Technical Writing	3
or ENGL 202H Effective Writing: Honors	
MATH 140 Calculus With Analytic Geometry I	4
or MATH 140H Honors Calculus with Analytic Geometry I	
MATH 141 Calculus with Analytic Geometry II	4
or MATH 141H Honors Calculus with Analytic Geometry II	
MATH 220 Matrices	2-3
or MATH 220H Honors Matrices	
MATH 250 Ordinary Differential Equations	3-4
or MATH 251 Ordinary and Partial Differential Equations	
or MATH 251H Honors Ordinary and Partial Differential Equations	
Select 3 credits from the following:	3
CAS 100A Effective Speech	
CAS 100B Effective Speech	
CAS 100C Effective Speech	
CAS 100S Effective Speech	
CAS/ENGL 138T Rhetoric and Civic Life II	
Select 3 credits from the following:	3
ENGL 15 Rhetoric and Composition	
ENGL 30H Honors Rhetoric and Composition	
ENGL/CAS 137H Rhetoric and Civic Life I	
ESL 15 ESL Composition for American Academic Communication II	
Select 4 credits from the following:	4
CMPEN 270 Digital Design: Theory and Practice	
CMPEN 271 Introduction to Digital Systems and Digital Design Laboratory ²	

¹ CMPSC 122 does not require a grade of C or better.

² CMPEN 275 does not require a grade of C or better.

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.