

# ELECTRICAL ENGINEERING TECHNOLOGY, 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:** Wilkes-Barre

## Degree Requirements

For the Bachelor of Science degree in Electrical Engineering Technology, a minimum of 128 credits is required:

| Requirement                | Credits |
|----------------------------|---------|
| General Education          | 45      |
| Electives                  | 4-18    |
| Requirements for the Major | 86-97   |

18-21 of the 45 credits for General Education are included in the Requirements for the Major. For the General Electrical Engineering Technology Option, this includes: 9 credits of GN courses; 6 credits of GQ courses; 3 credits of GS; 3 credits of GWS courses. The remaining 24 General Education credits must be distinct from the Requirements for the Major. For the Power and Automation Option, this includes: 9 credits of GN courses; 6 credits of GQ courses; 3 credits of GWS courses. The remaining 27 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/>).

### Common Requirements for the Major (All Options)

| Code                                                      | Title                                             | Credits |
|-----------------------------------------------------------|---------------------------------------------------|---------|
| <b>Prescribed Courses</b>                                 |                                                   |         |
| CHEM 110                                                  | Chemical Principles I                             | 3       |
| CHEM 111                                                  | Experimental Chemistry I                          | 1       |
| EET 419                                                   | Capstone Proposal Preparation                     | 1-3     |
| <i>Prescribed Courses: Require a grade of C or better</i> |                                                   |         |
| EET 312                                                   | Electric Transients                               | 4       |
| EET 331                                                   | Electronic Design                                 | 4       |
| EET 420W                                                  | Electrical Engineering Technology 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       |
| <b>Additional Courses</b>                                 |                                                   |         |
| CMPEN 372                                                 | Microcontrollers                                  | 3       |
| or CMPET 211                                              | Embedded Processors and DSP                       |         |
| EE 310                                                    | Electronic Circuit Design I                       | 4       |

|                                                           |                                                                                                |     |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------|-----|
| or EET 212W                                               | Op Amp and Integrated Circuit Electronics                                                      |     |
| Select 2-3 credits from the following:                    |                                                                                                | 2-3 |
| EDSGN 100                                                 | Cornerstone Engineering Design                                                                 |     |
| EDSGN 100S                                                | Introduction to Engineering Design                                                             |     |
| EGT 119                                                   | Introduction to CAD for Electrical and Computer Engineering                                    |     |
| Select 3 credits from the following:                      |                                                                                                | 3   |
| CMPSC 101                                                 | Introduction to Programming                                                                    |     |
| CMPSC 121                                                 | Introduction to Programming Techniques                                                         |     |
| CMPSC 131                                                 | Programming and Computation I: Fundamentals                                                    |     |
| CMPSC 201                                                 | Programming for Engineers with C++                                                             |     |
| Select 3-4 credits from the following:                    |                                                                                                | 3-4 |
| PHYS 150                                                  | Technical Physics I                                                                            |     |
| PHYS 211                                                  | General Physics: Mechanics                                                                     |     |
| PHYS 250                                                  | Introductory Physics I                                                                         |     |
| Select 3-4 credits from the following:                    |                                                                                                | 3-4 |
| PHYS 151                                                  | Technical Physics II                                                                           |     |
| PHYS 212                                                  | General Physics: Electricity and Magnetism                                                     |     |
| PHYS 251                                                  | Introductory Physics II                                                                        |     |
| Select 3-4 credits from the following:                    |                                                                                                | 3-4 |
| IE 424                                                    | Process Quality Engineering                                                                    |     |
| MATH 220                                                  | Matrices                                                                                       |     |
| MATH 230                                                  | Calculus and Vector Analysis                                                                   |     |
| MATH 250                                                  | Ordinary Differential Equations                                                                |     |
| MATH/STAT 414                                             | Introduction to Probability Theory                                                             |     |
| MATH/STAT 418                                             | Introduction to Probability and Stochastic Processes for Engineering                           |     |
| STAT 200                                                  | Elementary Statistics                                                                          |     |
| STAT 401                                                  | Experimental Methods                                                                           |     |
| Select 4 credits from the following:                      |                                                                                                | 4   |
| CMPEN 270                                                 | Digital Design: Theory and Practice                                                            |     |
| CMPEN 271 & CMPEN 275                                     | Introduction to Digital Systems and Digital Design Laboratory                                  |     |
| CMPET 117 & CMPET 120                                     | Digital Electronics and Digital Electronics Laboratory                                         |     |
| Select 3-5 credits from the following:                    |                                                                                                | 3-5 |
| EE 385                                                    | Energy Systems and Electric Machines                                                           |     |
| EE 485                                                    | Energy Systems and Conversion                                                                  |     |
| EET 213W                                                  | Fundamentals of Electrical Machines Using Writing Skills                                       |     |
| EET 214 & EET 215                                         | Electric Machines and Energy Conversion and Electric Machines and Energy Conversion Laboratory |     |
| <i>Additional Courses: Require a grade of C or better</i> |                                                                                                |     |
| Select 5-8 credits from the following:                    |                                                                                                | 5-8 |
| EE 210 & EE 317                                           | Circuits and Devices and Circuit Design Tools and Data Acquisition                             |     |
| EET 310                                                   | Direct and Alternating Current Circuits                                                        |     |
| EET 311 & EET 114                                         | Alternating Current Circuits and Electrical Circuits II <sup>1</sup>                           |     |
| <b>Requirements for the Option</b>                        |                                                                                                |     |
| Select an option                                          |                                                                                                | 26  |

<sup>1</sup> EET 114 does not require a grade of C or better.

### Requirements for the Option

#### General Electrical Engineering Technology Option (26 credits)

Available at the following campuses: Harrisburg, Wilkes-Barre

| Code                                                             | Title                                           | Credits |
|------------------------------------------------------------------|-------------------------------------------------|---------|
| <b>Prescribed Courses</b>                                        |                                                 |         |
| ENGR 320Y                                                        | Design for Global Society                       | 3       |
| <b>Additional Courses</b>                                        |                                                 |         |
| <i>System Elective</i>                                           |                                                 |         |
| Select 8 credits of technical electives from the following:      |                                                 | 8       |
| EET 408                                                          | Communication System Design                     |         |
| EET 409                                                          | Power System Analysis I                         |         |
| EET 433                                                          | Control System Analysis and Design              |         |
| <i>Electronics Elective</i>                                      |                                                 |         |
| Select 4 credits from the following:                             |                                                 | 4       |
| EE 413                                                           | Power Electronics                               |         |
| EET 402                                                          | High-Frequency Circuit Design                   |         |
| EET 431                                                          | Advanced Electronic Design                      |         |
| EET 461                                                          | Power Electronics                               |         |
| EET 496                                                          | Independent Studies                             |         |
| <i>GEET Technical Electives</i>                                  |                                                 |         |
| Select 8 credits of GEET technical electives from the following: |                                                 | 8       |
| CMPEN 431                                                        | Introduction to Computer Architecture           |         |
| CMPET 401                                                        | Data Communication and Networking               |         |
| CMPET 402                                                        | Data Communication and Networking Laboratory    |         |
| CMPET 403                                                        | Switching Circuit Design                        |         |
| EE 413                                                           | Power Electronics                               |         |
| EE 442                                                           | Solid State Devices                             |         |
| EE 453                                                           | Fundamentals of Digital Signal Processing       |         |
| EE/EGEE/ESC 456                                                  | Introduction to Neural Networks                 |         |
| EE 458                                                           | Digital Image Processing and Computer Vision    |         |
| EET 402                                                          | High-Frequency Circuit Design                   |         |
| EET 408                                                          | Communication System Design                     |         |
| EET 409                                                          | Power System Analysis I                         |         |
| EET 410                                                          | Power System Analysis II                        |         |
| EET 413                                                          | Optoelectronics                                 |         |
| EET 414                                                          | Biomedical Instrumentation                      |         |
| EET 431                                                          | Advanced Electronic Design                      |         |
| EET 433                                                          | Control System Analysis and Design              |         |
| EET 456                                                          | Automation and Robotics                         |         |
| EET 461                                                          | Power Electronics                               |         |
| EET 496                                                          | Independent Studies                             |         |
| <i>Science, Engineering, and Technology (SET Electives)</i>      |                                                 |         |
| Select 3 credits from the following:                             |                                                 | 3       |
| BIOL 141                                                         | Introduction to Human Physiology                |         |
| CHEM 112                                                         | Chemical Principles II                          |         |
| CHEM 113                                                         | Experimental Chemistry II                       |         |
| CMPSC 122                                                        | Intermediate Programming                        |         |
| CMPSC 132                                                        | Programming and Computation II: Data Structures |         |

|           |                                                  |
|-----------|--------------------------------------------------|
| CMPSC 200 | Programming for Engineers with MATLAB            |
| CMPSC 201 | Programming for Engineers with C++               |
| CMPSC 312 | Computer Organization and Architecture           |
| EE 330    | Engineering Electromagnetics                     |
| EE 341    | Semiconductor Device Principles                  |
| EMCH 211  | Statics                                          |
| EMCH 212  | Dynamics                                         |
| EMCH 213  | Strength of Materials                            |
| MATH 220  | Matrices                                         |
| MATH 230  | Calculus and Vector Analysis                     |
| MATH 231  | Calculus of Several Variables                    |
| MATH 232  | Integral Vector Calculus                         |
| MATH 250  | Ordinary Differential Equations                  |
| MATH 251  | Ordinary and Partial Differential Equations      |
| MATH 252  | Partial Differential Equations                   |
| MATH 430  | Linear Algebra and Discrete Models I             |
| ME 201    | Introduction to Thermal Science                  |
| ME 300    | Engineering Thermodynamics I                     |
| PHYS 213  | General Physics: Fluids and Thermal Physics      |
| PHYS 214  | General Physics: Wave Motion and Quantum Physics |
| PHYS 237  | Introduction to Modern Physics                   |
| PHYS 462  | Applications of Physics in Medicine              |
| SSET 495  | Internship                                       |
| STAT 200  | Elementary Statistics                            |

#### Power and Automation Option (26 credits)

Available at the following campuses: Wilkes-Barre

| Code                                  | Title                                        | Credits |
|---------------------------------------|----------------------------------------------|---------|
| <b>Additional Courses</b>             |                                              |         |
| <i>System Electives</i>               |                                              |         |
| Select 12 credits from the following: |                                              | 12      |
| EET 409                               | Power System Analysis I                      |         |
| EET 410                               | Power System Analysis II                     |         |
| EET 433                               | Control System Analysis and Design           |         |
| EET 461                               | Power Electronics                            |         |
| EET 475                               | Intermediate Programmable Logic Controllers  |         |
| <i>Additional Electives</i>           |                                              |         |
| Select 14 credits from the following: |                                              | 14      |
| CMPET 401                             | Data Communication and Networking            |         |
| CMPET 402                             | Data Communication and Networking Laboratory |         |
| CMPET 403                             | Switching Circuit Design                     |         |
| EET 341                               | Measurements and Instrumentation             |         |
| EET 402                               | High-Frequency Circuit Design                |         |
| EET 408                               | Communication System Design                  |         |
| EET 409                               | Power System Analysis I                      |         |
| EET 410                               | Power System Analysis II                     |         |
| EET 413                               | Optoelectronics                              |         |
| EET 414                               | Biomedical Instrumentation                   |         |
| EET 431                               | Advanced Electronic Design                   |         |
| EET 433                               | Control System Analysis and Design           |         |
| EET 456                               | Automation and Robotics                      |         |

|          |                                             |
|----------|---------------------------------------------|
| EET 461  | Power Electronics                           |
| EET 475  | Intermediate Programmable Logic Controllers |
| EET 495  | Internship                                  |
| EET 496  | Independent Studies                         |
| EET 497  | Special Topics                              |
| EMCH 211 | Statics                                     |
| EMCH 212 | Dynamics                                    |
| ME 201   | Introduction to Thermal Science             |

## 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.