ELECTRICAL ENGINEERING TECHNOLOGY, B.S. (ENGINEERING)

Begin Campus: Any Penn State Campus
End Campus: Wilkes-Barre

Program Description

The Bachelor of Science graduate with a major in Electrical Engineering Technology (EET) is an engineering technologist who can bridge the gap between scientific advancement and practical electrical devices and systems. Research in all fields of electrical engineering has produced an abundance of new knowledge in recent years. Many of these advanced scientific achievements have been unused due to the shortage of engineering technologists specifically educated to convert scientific information into practical devices and systems.

The EET major helps equip students with the various skills necessary to adapt new scientific knowledge to new products. Technical selections are offered in the senior year to provide some degree of specialization, but all graduates receive a well-rounded basic education in electrical and electronic design principles. The strengths of the program include: an applied hands-on program; extensive laboratory experience; promising job placement; and accreditation by the Engineering Technology Accreditation Commission of ABET, www.abet.org (http://www.abet.org).

EET graduates who wish to continue their professional development can take the Fundamentals of Engineering examination in Pennsylvania, a prerequisite for taking the Professional Engineering examination.

Students are directed to https://bulletins.psu.edu/undergraduate/general-education/ for an explanation of the Penn State General Education requirements.

What is Electrical Engineering Technology?

Electrical engineering technology (EET) is an engineering technology field that implements and applies the principles of electrical engineering. Like electrical engineering, EET deals with the design, application, installation, manufacturing, operation or maintenance of electrical/electronic systems. However, EET is a specialized discipline that has more focus on application, theory, and applied design, and implementation, while electrical engineering may have more of a generalized emphasis on theory and conceptual design.

You Might Like This Program If...

• You enjoy problem-solving and math.
• You prefer practical rather than theoretical solutions, and application and implementation over conceptual modeling.
• You enjoy working on multidisciplinary teams on complex problems.
• You want to acquire knowledge to get a good job in industry.
• You want to pursue a career as a technologist in sectors such as manufacturing, product design, testing, or technical services and sales.

Entrance to Major

Entry to the Electrical Engineering Technology major requires a 2.00 or higher cumulative grade-point average.

Re-enrollment

Associate degree students should file a re-enrollment form during the final semester of their associate degree. Students re-enrolling from an associate’s degree into the bachelor’s degree should run a degree audit from LionPATH, using the EET major code, to determine their curriculum requirements. Similar considerations apply to students changing majors from programs in science or engineering.

Admission Requirements for Transfer Students

Applicants must have earned a high school diploma or equivalent and have attempted at least 18 semester credits at a regionally accredited college or university with at least a 2.0 cumulative grade-point average (4.0 scale). The evaluation of prior college work is done on an individual basis by the Office of Enrollment Services at Penn State Harrisburg.

Degree Requirements

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

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>General Education</td>
<td>45</td>
</tr>
<tr>
<td>Electives</td>
<td>5-16</td>
</tr>
<tr>
<td>Requirements for the Major</td>
<td>85-96</td>
</tr>
</tbody>
</table>

18 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 3 credits of GWS courses; 9 credits of GN courses; 6 credits of GQ 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 (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44).

Common Requirements for the Major (All Options)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 110</td>
<td>Chemical Principles I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 111</td>
<td>Experimental Chemistry I</td>
<td>1</td>
</tr>
<tr>
<td>EET 419</td>
<td>Project Proposal Preparation</td>
<td>1</td>
</tr>
<tr>
<td>ENGL 202C</td>
<td>Effective Writing: Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>MATH 140</td>
<td>Calculus With Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 141</td>
<td>Calculus with Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>EET 312</td>
<td>Electric Transients</td>
<td>4</td>
</tr>
<tr>
<td>EET 331</td>
<td>Electronic Design</td>
<td>4</td>
</tr>
<tr>
<td>EET 420W</td>
<td>Electrical Design Project</td>
<td>3</td>
</tr>
</tbody>
</table>

Prescribed Courses: Require a grade of C or better

Additional Courses

Select 2-3 credits of the following: 1

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDSGN 100</td>
<td>Cornerstone Engineering Design</td>
<td></td>
</tr>
<tr>
<td>EGT 101</td>
<td>and Introduction to Computer Aided Drafting</td>
<td></td>
</tr>
<tr>
<td>EGT 102</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Select 3 credits of the following:

- CMPSC 101 Introduction to Programming
- CMPSC 121 Introduction to Programming Techniques
- CMPSC 201 Programming for Engineers with C++

Select 6-8 credits of the following:

- PHYS 150 Technical Physics I
  & PHYS 151 and Technical Physics II
- PHYS 211 General Physics: Mechanics
  & PHYS 212 and General Physics: Electricity and Magnetism

Select 3-4 credits of the following:

- MATH 230 Calculus and Vector Analysis
- MATH 250 Ordinary Differential Equations
- STAT 200 Elementary Statistics

Select 4 credits of the following:

- CMPEN 271 Introduction to Digital Systems
  & CMPEN 275 Digital Design Laboratory
- CMPET 117 Digital Electronics
  & CMPET 120 and Digital Electronics Laboratory

Select 3-4 credits of the following:

- CMPEH 472 Microprocessors
- CMPET 211 Embedded Processors and DSP

Select 3-5 credits of the following:

- EE 310 Electronic Circuit Design I
  & EE 205 and
  EE 210

Select 5-8 credits of the following:

- EE 485 Energy Systems and Conversion
- EET 213W Fundamentals of Electrical Machines Using Writing Skills

Additional Courses: Require a grade of C or better

Select 5-8 credits of the following:

- EE 210 Circuits and Devices
  & EE 314 and Signals and Circuits II
- EE 315 Electrical Signals and Circuits with Lab
- EET 311 Alternating Current Circuits
  & EET 114 and Electrical Circuits II

Requirements for the Option

Select an option

1. Courses required by PSU 2 EET programs.
2. EET 114 does not require a grade of C or better.

Requirements for the Option

Computer Engineering Technology Option (26 credits)

Available at the following campuses: Harrisburg, Wilkes-Barre

Select 3 credits of the following:

- CMPSC 122 Intermediate Programming
- CMPSC 402

Applications Elective

Select 4 credits of technical electives of the following:

- CMPET 412 Microcomputers
- EET 456 Automation and Robotics

CMPET Technical Electives

Select 8 credits of the following:

- EE 341 Semiconductor Device Principles
- EE 441 Semiconductor Integrated Circuit Technology
- EE 453 Fundamentals of Digital Signal Processing
- EET 402 High-Frequency Circuit Design
- EET 408 Communication System Design
- EET 413 Optoelectronics
- EET 414 Biomedical Instrumentation
- EET 431 Advanced Electronic Design
- EET 433 Control System Analysis and Design
- EET 478 Digital Communication Systems
- ET 496 Independent Studies

General Electrical Engineering Technology Option (26 credits)

Available at the following campuses: Harrisburg, Wilkes-Barre

Select 6 credits from any previous elective list plus the following:

- CMPSC 452

Additional Courses

System Elective

Select 8 credits of technical electives of the following:

- EET 408 Communication System Design
- EET 409 Power System Analysis I
- EET 433 Control System Analysis and Design

Electronics Elective

Select 4 credits of the following:

- EET 402 High-Frequency Circuit Design
- EET 431 Advanced Electronic Design

GEET Technical Electives

Select 8 credits of GEET technical electives of the following:

- CMPEN 431 Introduction to Computer Architecture
- CMPET 401 Data Communication and Networking
- CMPET 403 Switching Circuit Design
- CMPET 412 Microcomputers
- EE 441 Semiconductor Integrated Circuit Technology
- EE 453 Fundamentals of Digital Signal Processing
- EE 458 Digital Image Processing and Computer Vision
- EET 410 Power System Analysis II
- EET 413 Optoelectronics
- EET 414 Biomedical Instrumentation
- EET 456 Automation and Robotics
- EET 478 Digital Communication Systems
- ET 496 Independent Studies

Select 6 credits from any previous elective list plus the following:

- CMPSC 452

Additional Courses

2nd Programming Elective
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.

<table>
<thead>
<tr>
<th>Foundations (grade of C or better is required.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Quantification (GQ): 6 credits</td>
</tr>
<tr>
<td>• Writing and Speaking (GWS): 9 credits</td>
</tr>
</tbody>
</table>

Knowledge Domains

| • Arts (GA): 6 credits                        |
| • Health and Wellness (GHW): 3 credits       |
| • Humanities (GH): 6 credits                 |
| • Social and Behavioral Sciences (GS): 6 credits |
| • Natural Sciences (GN): 9 credits           |

Integrative Studies (may also complete a Knowledge Domain requirement)

| • Inter-Domain or Approved Linked Courses: 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 (http://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.

Academic Advising

The objectives of the university’s academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee’s unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (https://senate.psu.edu/policies-and-rules-for-undergraduate-students/32-00-advising-policy/)

Wilkes-Barre

Timothy Sichler
Assistant Teaching Professor
44 University Drive
Dallas, PA 18612
570-675-9135
tjs37@psu.edu

Harrisburg

AB Shafaye, M.S.
Program Chair
Olmsted Building, W256a
Middletown, PA 17057
717-948-6349
mes121@psu.edu

Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2022-23 academic year. To access previous years’ suggested academic plans, please visit the archive (https://bulletins.psu.edu/undergraduate/archive/) to view the appropriate Undergraduate Bulletin edition (Note: the archive only contains suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin).
General Option: Electrical Engineering Technology, B.S. at Wilkes-Barre Campus

The course series listed below provides only one of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an Academic Requirements or What If report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 22 or higher placement on ALEKS‡</td>
<td>3</td>
<td>EET 114</td>
<td>4</td>
</tr>
<tr>
<td>MATH 26 or higher placement on ALEKS‡</td>
<td>3</td>
<td>EET 118</td>
<td>1</td>
</tr>
<tr>
<td>EET 105</td>
<td>3</td>
<td>CMPET 117</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 15‡</td>
<td>3</td>
<td>CMPET 120</td>
<td>1</td>
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<tr>
<td>PSU 8</td>
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<td>MATH 140‡</td>
<td>4</td>
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<td>CMPSC 101‡</td>
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<td>EDGSN 100</td>
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<tr>
<td>PHYS 151 or 250</td>
<td>3-4</td>
<td>General Education Course (GHW)</td>
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<tr>
<td></td>
<td><strong>16</strong></td>
<td></td>
<td><strong>19-20</strong></td>
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Second Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET 212W</td>
<td>4</td>
<td>General Education Course</td>
<td>3</td>
</tr>
<tr>
<td>EET 214</td>
<td>3</td>
<td>General Education Course</td>
<td>3</td>
</tr>
<tr>
<td>EET 215</td>
<td>1</td>
<td>General Education Course</td>
<td>3</td>
</tr>
<tr>
<td>MATH 141‡</td>
<td>4</td>
<td>CMPET 211</td>
<td>3</td>
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<tr>
<td>PHYS 151 or 251</td>
<td>3-4</td>
<td>CAS 100A‡</td>
<td>3</td>
</tr>
<tr>
<td>General Education Course</td>
<td></td>
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<td>3</td>
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<tr>
<td></td>
<td><strong>15-16</strong></td>
<td></td>
<td><strong>18</strong></td>
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</table>

Third Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 110</td>
<td>3</td>
<td>EET 312*</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 111</td>
<td>1</td>
<td>EET 331*</td>
<td>4</td>
</tr>
<tr>
<td>EET 311*</td>
<td>4</td>
<td>ENGL 202C‡</td>
<td>3</td>
</tr>
<tr>
<td>General Education Course</td>
<td>3</td>
<td>General Education Course</td>
<td>3</td>
</tr>
<tr>
<td>STAT 200†</td>
<td>4</td>
<td>General Education Course</td>
<td>3</td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
<td><strong>15</strong></td>
<td></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

Fourth Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET 419</td>
<td>1</td>
<td>EET 420W</td>
<td>3</td>
</tr>
<tr>
<td>EET 431³</td>
<td>4</td>
<td>EET 456²</td>
<td>4</td>
</tr>
<tr>
<td>EET 414²</td>
<td>4</td>
<td>EET 408⁴</td>
<td>4</td>
</tr>
<tr>
<td>EET 478²</td>
<td>4</td>
<td>EET 4XX elective from list</td>
<td>4</td>
</tr>
<tr>
<td>EET 433⁴</td>
<td>4</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>17</strong></td>
<td></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

Total Credits 132-134

* Course requires a grade of C or better for the major
† Course requires a grade of C or better for General Education
# Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy University Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of ‘C’ or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

1 Math electives include:
   MATH 230, MATH 250, MATH 408, MATH 411, MATH 444, MATH 446, STAT 200.
2 GEET electives include:
   CMPEN 431, EET 441, EE 453, EET 451, EET 454, EET 456, EET 478, ENGR 496
3 Electronics Elective:
   Select 4 credits from: EET 402, EET 423, EET 431.
4 System Elective:
   Select 8 credits of technical electives from: EET 408, EET 409, EET 433.

Career Paths

According to the U.S. Bureau of Labor Statistics, electrical engineering technologists work closely with electrical and electronics engineers and computer hardware engineers in the computer systems design services industry. Opportunities can be found in a variety of firms engaged in electronic manufacturing, industrial control, applications engineering, and in power utilities. EET graduates are encouraged to continue their professional development by taking the Fundamentals of Engineering Examination at the end of their senior year; the FE exam is a prerequisite for taking the Professional Engineering Examination.

Careers

- Design, maintain, troubleshoot electronic circuits and systems. These range from power electronics, fiber optics, control systems, networking technologies, electronic systems, etc.
- Strong focus on power generation and distribution.
- Strong introduction to embedded systems.
- Automation of facilities: From distribution centers to manufacturing plants.
- Experience in the use of hardware used in instrumentation laboratories.
- This program trains students in the same software as currently used by industry.
Opportunities for Graduate Studies
Graduates of the EET program are eligible to pursue graduate studies in a variety of programs such as Electrical Engineering, Systems Engineering, Engineering Management, etc. In some cases prior to being accepted to these programs, graduates of the EET program may be required to take additional math courses.

Accreditation
This program is accredited by the Engineering Technology Accreditation Commission of ABET, www.abet.org (http://www.abet.org).
MORE INFORMATION ABOUT ABET ACCREDITATION (http://www.abet.org)

Professional Licensure/Certification
Many U.S. states and territories require professional licensure/certification to be employed. If you plan to pursue employment in a licensed profession after completing this program, please visit the Professional Licensure/Certification Disclosures by State (https://psu.edu/state-licensure-disclosures/) interactive map.

Contact
Wilkes-Barre
ENGINEERING TECHNOLOGY AND COMMONWEALTH ENGINEERING
44 University Drive
Dallas, PA 18612
570-675-9135
tjs37@psu.edu

https://wilkesbarre.psu.edu/academics/eet (https://wilkesbarre.psu.edu/academics/eet/)

Harrisburg
SCHOOL OF SCIENCE, ENGINEERING, AND TECHNOLOGY
Olmsted Building W256
Middletown, PA 17057
717-948-4349
klb68@psu.edu

http://harrisburg.psu.edu/science-engineering-technology/ee-eet/bachelor-science-electrical-engineering-technology (http://harrisburg.psu.edu/science-engineering-technology/ee-eet/bachelor-science-electrical-engineering-technology/)