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 the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone 410-347-7700, Web at https://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.

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.

Direct Admission to the Major

Incoming first-year students who meet the program admission requirements are admitted directly into the major. Admission restrictions may apply for change-of-major and/or change-of-campus students.

For more information about the admission process for this major, please send a request to the college, campus, or program contact (listed in the Contact tab).

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	5-18
Requirements for the Major	86-96

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: 3 credits of GWS courses; 9 credits of GN courses; 6 credits of GQ courses; 3 credits of GS. For the Power and Automation Option, this includes: 3 credits of GWS coures; 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 (https://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)

Code	Title	Credits
Prescribed Courses		
CHEM 110	Chemical Principles I	3
CHEM 111	Experimental Chemistry I	1
EET 419	Capstone Proposal Preparation	1
Prescribed Courses: Require a grade of C or better		
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
Additional Courses		
CMPEH 472	Microprocessors	3-4
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 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	
Additional Courses: Require a grade of C or better		
Select 5-8 credits from the following:		5-8
EE 210 & EE 317	Circuits and Devices and Circuits II and Data Acquisition	
EET 310	Direct and Alternating Current Circuits	
EET 311 & EET 114	Alternating Current Circuits and Electrical Circuits II [1]	
Requirements for the Option		
Select an option		26

[1] 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
Prescribed Courses		
ENGR 320Y	Design for Global Society	3
Additional Courses		
System Elective		
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	
Electronics Elective		
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	
GEET Technical Electives		
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	
CMPET 412	Microcomputers	
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 478	Digital Communication Systems	
EET 496	Independent Studies	
Science, Engineering, and Technology (SET Electives)		
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: Harrisburg, Wilkes-Barre

Code	Title	Credits
Additional Courses		
System Electives		
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	
Additional Electives		
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 478	Digital Communication Systems	
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/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.

Program Educational Objectives

The BS EET program educational objectives are to produce graduates who, during the first few years of professional practice, will be able to perform the following functions or activities at a level appropriate to their baccalaureate degree:

1. Accomplish mastery in electronics, electrical circuit analysis, electrical machines, and microcontrollers. Accomplish mastery in the design and implementation of at least two of these systems: control systems; communication systems; power systems.
2. Apply creativity using project-based work to design systems of processes for broadly defined and complex engineering problems.
3. Produce lucid documents, deliver effective oral presentations with professional quality graphics. Communicate effectively in a professional manner. Include the use of appropriate technical literature.
4. Design and conduct open-ended experiments for broadly defined and complex engineering problems. Analyze and interpret their results. This includes the use of appropriate instruments and simulation tools and the development of appropriate software code.
5. Effectively work in technical groups including functioning as their leader.

Student Outcomes

Graduates of the Electrical Engineering Technology program should demonstrate:

1. An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline.
2. An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline.
3. An ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.
4. An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.
5. An ability to function effectively as a member as well as a leader on technical teams.

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/)

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Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2024-25 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.

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

Fall	Credits	Spring	Credits
MATH 22 or higher placement on ALEKS[‡]		3 EET 114	4

MATH 26 or higher placement on ALEKS‡	3	EET 118	1
EET 105	3	CMPET 117	3
ENGL 15‡	3	CMPET 120	1
PSU 8	1	MATH 140‡	4
CMPSC 101‡	3	EDSGN 100	3
		PHYS 150	3
	16		**19**

Second Year

Fall	Credits	Spring	Credits
EET 212W	4	General Education Course	3
EET 214	3	General Education Course	3
EET 215	1	General Education Course	3
MATH 141‡	4	CMPET 211	3
PHYS 151 or 251	3-4	CAS 100A‡	3
		General Education Course (GHW)	3
	15-16		**18**

Third Year

Fall	Credits	Spring	Credits
CHEM 110	3	EET 312*	4
CHEM 111	1	EET 331*	4
EET 311*	4	ENGL 202C‡	3
General Education Course	3	General Education Course	3
STAT 200[1]	4	General Education Course	3
	15		**17**

Fourth Year

Fall	Credits	Spring	Credits
EET 419	1	EET 420W	3
EET 431[3]	4	EET 456[2]	4
EET 414[2]	4	EET 408[4]	4
EET 478[2]	4	EET 4XX elective from list	4
EET 433[4]	4		
	17		**15**

Total Credits 132-133

* 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 Cultural Diversity 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.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

1 **Math electives include:**
MATH 230, MATH 250, MATH 408, MATH 411, MATH 444, MATH 446, STAT 200.

2 **GEET electives include:**
&CMPEH 449, CMPET 401, CMPET 402, CMPET 403, CMPET 412, CMPEN 431, EET 441, EE 453, EET 410, EET 413, EET 414, EET 456, EET 478, ET 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

The Bachelor of Science in Electrical Engineering Technology at Penn State Wilkes-Barre is accredited by the Engineering Technology Accreditation Commission of ABET, https://www.abet.org, under the commission's General Criteria and Program Criteria for Electrical/Electronic(s) Engineering Technology and Similarly Named Programs.

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://www.psu.edu/state-licensure-disclosures/) interactive map.

Contact

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