

ELECTRICAL ENGINEERING TECHNOLOGY, A.ENG.T.

Begin Campus: Erie, Fayette, York

End Campus: Erie, Fayette, York

Program Description

The Electrical Engineering Technology (2EET) major helps prepare graduates for technical positions in the expanding fields of electronics, computers and microprocessors, instrumentation, and electrical equipment. The primary objective is to provide a broad foundation of theoretical and practical knowledge in the areas of electrical and electronic circuits, digital circuits, computers, electrical machinery, and programmable logic controls.

Graduates of the Electrical Engineering Technology major may qualify for admission to the baccalaureate degree majors in Electrical Engineering Technology offered at Penn State Harrisburg, Capital College; the baccalaureate degree major in Electrical and Computer Engineering Technology at Penn State Erie, The Behrend College; or the baccalaureate degree major in Electro-Mechanical Engineering Technology offered at Penn State Altoona, Penn State Berks, Penn State New Kensington or Penn State York. Two baccalaureate tracks are available to streamline the transition to these degree programs. Students interested in pursuing the baccalaureate degree major of Electrical Engineering Technology at Penn State Harrisburg should follow track c. A general track is also provided for students who decide not to continue their engineering technology education at the baccalaureate level.

What is Electrical Engineering Technology?

Electrical engineering technology focuses on the planning, designing, installing, operating, and maintaining electrical power systems and electronic devices. Electrical engineering technicians assist engineers with the manufacture, installation, operation, design, and repair of a wide range of electronic products.

You Might Like This Program If...

- You are passionate about technology, circuits, microprocessors, and electronics.
- You enjoy using computers and their software in a technical environment.
- You are interested in the design, application, installation, manufacture, operation, and maintenance of electrical systems and devices.

Entrance to Major

Students must have a minimum 2.0 GPA to change to this Associate degree after admission to the University.

Degree Requirements

For the Associate in Engineering Technology degree in Electrical Engineering Technology, a minimum of 66 credits is required:

Requirement	Credits
General Education	21
Requirements for the Major	57-62

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 (<http://bulletins.psu.edu/undergraduate/general-education/associate-degree-general-education-program>) section of the Bulletin and consult your academic adviser.

Foundations (grade of C or better is required.)

- **Quantification (GQ):** 3 credits
- **Writing and Speaking (GWS):** 3 credits

Knowledge Domains

- **Arts (GA):** 3 credits
- **Humanities (GH):** 3 credits
- **Social and Behavioral Sciences (GS):** 3 credits
- **Natural Sciences (GN):** 3 credits

Foundations or Knowledge Domains

- **A General Education course selected from GWS, GQ, GN, GA, GH, or GS, and may include Integrative Studies (Inter-domain or Linked) courses:** 3 credits

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.

12-15 of these 21 credits are included in the Requirements for the Major.

University Degree Requirements

Cultures Requirement

3 credits of United States (US) or International (IL) cultures coursework are required and may satisfy other requirements

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 60 degree credits must be earned for an associate degree. The requirements for some programs may exceed 60 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

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.

Requirements for the Major

This includes 12-15 credits of General Education courses: 3 credits of GN courses; 3 credits of GQ courses; 6 credits of GWS courses, 0-3 credits of GH or GS.

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>).

Code	Title	Credits
Prescribed Courses		
CAS 100	Effective Speech	3
CMPET 211	Embedded Processors and DSP	3
EET 212	Op Amp and Integrated Circuit Electronics	4
EET 214	Electric Machines and Energy Conversion	3
EET 215	Electric Machines and Energy Conversion Laboratory	1
<i>Prescribed Courses: Require a grade of C or better</i>		
CMPET 117	Digital Electronics	3
CMPET 120	Digital Electronics Laboratory	1
EET 114	Electrical Circuits II	4
EET 118	Electrical Circuits Laboratory	1
Additional Courses		
ENGL 15	Rhetoric and Composition	3
or ENGL 30	Honors Freshman Composition	
Select 5-6 credits of the following:		5-6
MATH 22 & MATH 26	College Algebra II and Analytic Geometry and Plane Trigonometry ¹	
MATH 40	Algebra, Trigonometry, and Analytic Geometry ¹	
MATH 81 & MATH 82	Technical Mathematics I and Technical Mathematics II ¹	
PHYS 150	Technical Physics I	3-4
or PHYS 211	General Physics: Mechanics	
or PHYS 250	Introductory Physics I	
Select at least 22-26 credits from one of the following three tracks: 22-26		
A. General Track ²		
EDSGN 100	Introduction to Engineering Design	
EET 105	Electrical Systems	
IET 101	Manufacturing Materials, Processes, and Laboratory	
MCHT 111	Mechanics for Technology: Statics	
EET 275	Introduction to Programmable Logic Controls or EMET 230 Computerized I/O Systems	
PHYS 151	Technical Physics II or PHYS 212 General Physics: Electricity and Magnetism or PHYS 251 Introductory Physics II or CHEM 110 (Chemical Principles I & CHEM 111 and Experimental Chemistry I	
STS 200	Critical Issues in Science, Technology, and Society or STS/ PHIL 233	

or STS 245 Globalization, Technology, and Ethics

Select 3-4 credits in consultation with your adviser from the approved program list

B. Baccalaureate Electrical and Computer Engineering Technology (ECET) Track:

CMPET 5	Engineering Methods in Engineering Technology
EET 2	Introduction to Engineering Technology
EET 101	Electrical Circuits I
EET 109	Electrical Circuits Laboratory I
CHEM 110	Chemical Principles I
CHEM 111	Experimental Chemistry I
EET 275	Introduction to Programmable Logic Controls
EGT 119	Introduction to CAD for Electrical and Computer Engineering
MATH 83	Technical Calculus or MATH 140 (Calculus With Analytic Geometry I
MATH 210	Calculus with Engineering Technology Applications (or 3 credits of General Education natural science GN)

C. Baccalaureate Electro-Mechanical Engineering Technology (EMET) Track ^{2,3}

EDSGN 100	Introduction to Engineering Design
EET 105	Electrical Systems
IET 101	Manufacturing Materials, Processes, and Laboratory
MCHT 111	Mechanics for Technology: Statics
EET 275	Introduction to Programmable Logic Controls or EMET 230 Computerized I/O Systems
MATH 83	Technical Calculus or MATH 140 (Calculus With Analytic Geometry I
PHYS 151	Technical Physics II or PHYS 212 General Physics: Electricity and Magnetism or PHYS 251 Introductory Physics II or CHEM 110 (Chemical Principles I & CHEM 111 and Experimental Chemistry I
STS 200	Critical Issues in Science, Technology, and Society or STS/ PHIL 233
or STS 245	Globalization, Technology, and Ethics

¹ A student planning to re-enroll into the baccalaureate degree major of Electro-Mechanical Engineering Technology (EMET), after graduation from the 2 EET program, must receive a grade of C or better in order to meet requirements of the EMET degree.

² This includes 3 credits of General Education courses: 3 credits of GH or GS.

³ A student planning to re-enroll into the baccalaureate degree major of Electrical Engineering Technology at Penn State Harrisburg, after graduation from the 2EET program, should follow Track C. They should select MATH 140 instead of MATH 83.

Program Educational Objectives

To produce graduates who, during the first few years of professional practice, will:

1. Demonstrate broad knowledge of electrical/electronics engineering technology practices to support design, application, installation, manufacturing, operation, and maintenance as required by their employer,
2. Apply basic mathematical and scientific principles for technical problem solving in areas which may include circuit analysis of both analog and digital electronics, microprocessors, programmable logic control, and electrical machines,
3. Utilize computers and software in a technical environment,
4. Demonstrate competence in written and oral communication,
5. Work effectively as an individual and as a member of a multidisciplinary team,
6. Show awareness of social concerns and ethical/professional responsibilities in the workplace, and
7. Matriculate into a baccalaureate degree and/or continue their professional training and adapt to changes in the workplace, through additional formal or informal education.

Program Objectives (Student Outcomes)

Students should possess:

- a. an ability to apply the knowledge, techniques, skills and modern tools of the disciplines to electrical engineering technology activities,
- b. an ability to apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge,
- c. an ability to conduct standard tests and measurements, and to conduct, analyze and interpret experiments,
- d. an ability to function effectively as a member of a technical team,
- e. an ability to identify, analyze and solve narrowly defined engineering technology problems,
- f. an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature,
- g. an understanding of the need for and an ability to engage in self-directed continued professional development, including engineering standards,
- h. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity,
- i. a commitment to quality, timeliness and continuous improvement.

In addition, 2EET graduates must demonstrate knowledge and hands-on competence appropriate to the objectives of the program in:

- A. the application of circuit analysis and design, computer programming, associated software, analog and digital electronics, and microcomputers, and engineering standards to the building, testing, operation, and maintenance of electrical/electronic(s) systems; and
- B. the application of natural sciences and mathematics at or above the level of algebra and trigonometry to the building, testing, operation, and maintenance of electrical/electronic systems.

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 need to plan the chosen program of study, and referrals to other specialized resources.

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

Erie

David Loker

Associate Professor of Engineering and Program Chair
250 Burke
Erie, PA 16563
814-898-6478
drl3@psu.edu

Fayette

Andrzej Gapinski

Associate Professor and Program Coordinator
2201 University Drive
Lemont Furnace, PA 15456
724-430-4239
ajg2@psu.edu

York

Michael Marcus

Associate Professor and Program Coordinator
Room 35 Main Classroom Building
1031 Edgecomb Ave.
York, PA 17403
717-771-4089
mxm81@psu.edu

Suggested Academic Plan

Electrical Engineering Technology - General Track at Fayette 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 26 (GQ) ^{††}	3 EET 114*	4
ENGL 15 (GWS) ^{††}	3 EET 118*	1
EET 105	3 CMPET 117*	3
IET 101	3 CMPET 120	1
EDSGN 100	3 MCHT 111	3
PSU 8	1-3 MATH 22 (GQ) ^{††}	3

	CAS 100 (GWS) ^{††}	3
	16-18	18
Second Year		
Fall	Credits Spring	Credits
EET 214	3 EET 212	4
EET 215	1 EET 275	3
COMPET 211	3 PHYS 151 (or CHEM 110 and CHEM 111 (4 credits))	3
PHYS 150 (GN) [†]	3 STS 233	3
General Education Course	3 Technical Elective or General Education Course	3-4
General Education Course of Technical Elective	3-4	
	16-17	16-17

Total Credits 66-70

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

Integrative Studies courses can be completed 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.

College Notes

A student's career/graduate school plans should be considered in developing an individual academic plan. **Be sure to consult an adviser in this department when scheduling courses.**

MCH T 111

MCH T 111 and STS 233 can be swapped (STS 233 in Semester 2 and MCH T 111 in Semester 4) if a student starts in Math 21 in the first semester.

Technical Electives

Students must have an additional 10 credits of technical elective from the following list: BET 201, BISC 3, CHEM 101, CHEM 110, CHEM 111, COMPSC 101, COMPSC 201C, EET 214, EET 215, EET 275, EET 297, EMET 230, IST 210, IST 220, MATH 83, MATH 140, MATH 141, PHYS 151, PHYS 251, TELECOM 140.

Technical electives typically offered in Fall only semester. CHEM 101 or COMPSC 121 (Math 140 Co-requisite). Math 140 can be used as a

technical elective and is offered every semester and is recommended if a student intends to pursue B.S. degree.

Technical Elective typically offered in Spring semester BiSC 3. Math 140 can be used as technical elective and offered every semester and is recommended if a student intends to pursue a B.S. degree.

PHYS 150

Most Students should take Physics 151, however students can use both CHEM 110 and 111 to satisfy this requirement

STS 233

MCH T 111 and STS 233 can be swapped (STS 233 in Semester 2 and MCH T 111 in Semester 4) if a student starts in Math 21 in the first semester.

Electrical Engineering Technology at Erie 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
EET 101	3 EET 114 [*]	4
EET 109	1 EET 118 [*]	1
EET 2 [†]	1 COMPET 117 [*]	3
ENGL 15, 30, or ESL 15 (GWS) ^{††}	3 COMPET 120 [*]	1
MATH 81 (GQ)	3 COMPET 5	1
General Education Course	3 MATH 82 (GQ) ^{††}	3
	PHYS 250 (GN) [†]	4
	14	17

Second Year

Fall	Credits Spring	Credits
COMPET 211	3 CAS 100 (GWS) ^{††}	3
EET 212	4 CHEM 110 (GN) [†]	3
EET 214	3 CHEM 111 [†]	1
EET 215	1 EET 275	3
MATH 83 ^{†‡}	4 EGT 119	2
General Education Course	3 General Education Course	3
	MATH 210 (GQ) or Natural Science Course (GN)	3
	18	18

Total Credits 67

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

Integrative Studies courses can be completed 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.

College Notes

MATH 81 (GQ)

The course is an entrance to major course to the ECET baccalaureate major requirement. Student must obtain a quality grade of C or better for entrance into the ECET major.

MATH 83 (GQ)

The course is an entrance to major course to the ECET baccalaureate major requirement. Student must obtain a quality grade of C or better for entrance into the ECET major.

Math substitutions: MATH 26 instead of MATH 81, MATH 22 instead of MATH 82, MATH 140 instead of MATH 83.

EET 212

Course will satisfy Writing Across the Curriculum requirement.

Electrical Engineering Technology at York 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
EDSGN 100	3 CMPET 117*	3
IET 101	3 CMPET 120*	1
EET 105	3 MCHT 111	3
MATH 26 (GQ) ^{†‡}	3 PHYS 150 or 250 (GN)	3-4
ENGL 15, 30, or ESL 15 (GWS) ^{†‡}	3 MATH 22 ^{†‡}	3
	CAS 100 (GWS) ^{†‡}	3
	15	16-17

Second Year

Fall	Credits Spring	Credits
EET 114*	4 CMPET 211	3
EET 118*	1 EET 214	3
EET 212*	4 EET 215	1
EET 275 or EMET 230	3 Technical Elective	3

PHYS 151 or 251 (or CHEM 110 and CHEM 111 (GN))	3-4 General Education Course	3
STS 233	3 General Education Course	3
	18-19	16

Total Credits 65-67

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

Integrative Studies courses can be completed 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.

College Notes:

Scheduling patterns for courses not taught each semester : Some major/option courses are offered only Fall or Spring semester, as listed on guide.

The courses in this major are sequential. If take out of sequence, scheduling conflicts may arise.

Program Notes:

Track Selections - see audit

Academic Advising Notes: Academic planning guides should always be used in conjunction with a degree audit and consultation with an adviser.

Career Paths

Many electrical technicians work in and with electrical utility companies and industries where they are involved in electrical power generation, power distribution, and machine control. Electrical technicians are often involved with the installation, operation, and maintenance of computer equipment and instrumentation. They may also work in technical sales.

MORE INFORMATION ABOUT CAREERS (<http://career.engr.psu.edu>)

MORE INFORMATION ABOUT OPPORTUNITIES FOR GRADUATE STUDIES (<http://www.engr.psu.edu/students/grad-prospective/default.aspx>)

Accreditation

This program is accredited by the Engineering Technology Accreditation Commission of ABET, www.abet.org (<http://www.abet.org>).

MORE INFORMATION (<http://www.abet.org>)

Contact

University Park

SCHOOL OF ENGINEERING DESIGN, TECHNOLOGY, AND PROFESSIONAL PROGRAMS

213 Hammond Building
University Park, PA 16802
814-865-2952

<http://www.sedtapp.psu.edu>

Erie

SCHOOL OF ENGINEERING
242 Jack Burke Research and Economic Development Center
5101 Jordan Road
Erie, PA 16563
814-898-6125
engineering@psu.edu

<http://behrend.psu.edu/school-of-engineering>

Fayette

2201 University Drive
Lemont Furnace, PA 15456
724-430-4239
ajg2@psu.edu

<http://fayette.psu.edu/electrical-engineering-technology>

York

35A Main Classroom Building
1031 Edgecomb Ave.
York, PA 17403
717-771-4089
mxm81@psu.edu

<http://york.psu.edu/academics/associate/electrical-engineering-technology>