

SURVEYING ENGINEERING TECHNOLOGY, A.ENG.T.

Begin Campus: Wilkes-Barre

End Campus: Wilkes-Barre

Program Description

The Surveying Engineering Technology major provides the basic undergraduate education required for private and public service as a technician in the surveying profession. Basic knowledge is provided in the areas of boundary, construction, topographic, photogrammetry, laser scanning, and land development. The curriculum is designed to develop an individual understanding of the skills and equipment needed to make precise surveying measurements.

Graduates of the Surveying Engineering Technology major may qualify for admission to the baccalaureate degree majors in Surveying Engineering or Structural Design and Construction Engineering Technology.

What is Surveying Engineering Technology?

Surveying is the science of measuring physical features of Earth to collect spatial information and to establish land boundaries. Survey engineering technologists learn the elements of surveying as applied to construction, land, topographic, geodetic, city, and photogrammetric surveys.

You Might Like This Program If...

- You enjoy the outdoors.
- You have an interest in math and science.
- You are passionate about robotic, GPS, scanner, GIS, and drone technology.
- You are interested in geographic data and how it is captured, stored, manipulated, analyzed, and managed.

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 Surveying Engineering Technology, a minimum of 66-69 credits is required:

Requirement	Credits
General Education	21
Requirements for the Major	57-60

12 of the 21 credits for General Education are included in the Requirements for the Major. This includes: 3 credits of GN courses; 3 credits of GQ courses; 6 credits of GWS 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/students/>

[policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/](https://senate.psu.edu/students/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/)).

Code	Title	Credits
Prescribed Courses		
EDSGN 100	Cornerstone Engineering Design	3
SUR 132	Surveying Software Analysis Tools	3
SUR 213	Route and Construction Surveying	3
SUR 222	Photogrammetry	3
SUR 241	Surveying Measurement Analysis	3
SUR 361	Surveying Laser Scanning	3
SUR 382	Subdivision Design	2
<i>Prescribed Courses: Require a grade of C or better</i>		
SUR 121	Elementary Surveying	3
SUR 122	Control Surveying	3
SUR 221	Large-scale Mapping Surveys	3
SUR 373W	Cadastral and Legal Aspects of Surveying	4
Additional Courses		
ENGL 202C or ENGL 202D	Effective Writing: Technical Writing Effective Writing: Business Writing	3
MATH 22 & MATH 26 or MATH 40	College Algebra With Analytic Geometry and Applications II and Plane Trigonometry and Applications of Trigonometry	5-6
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	
<i>Additional Courses: Require a grade of C or better</i>		
CAS 100A or CAS 100B	Effective Speech Effective Speech	3
ENGL 15 or ENGL 30H	Rhetoric and Composition Honors Rhetoric and Composition	3
MATH 110 or MATH 140	Techniques of Calculus I Calculus With Analytic Geometry I	4

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 associate degree 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/associate-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):** 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

Note: Up to six credits of Inter-Domain courses may be used for any Knowledge Domain requirement, but when a course may be used to satisfy more than one requirement, the credits from the course can be counted only once.

Exploration

- **Any General Education course (including GHW and Inter-Domain):** 3 credits

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 associates 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 (<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 Associate Surveying Engineering Technology program prepares students with technical and professional skills for professional practice. Within three to five years of graduation, our Associate Surveying Engineering Technology graduates will have:

1. Demonstrated proficiency in applying basic principles and methods of surveying practice to perform surveys, analyze results, and assist in surveying and/or engineering design solutions.

2. Demonstrated proficiency in effectively articulating technical and non-technical concepts to diverse audiences through written, verbal, and graphical mediums.
3. Worked collaboratively within multidisciplinary teams, showcasing their ability to function as productive team members, respect diverse perspectives, and contribute to team success.
4. Engaged in continuous professional development, or further their education to pursue professional certification(s), or participating in professional organizations, to enhance their knowledge and skills and stay current in the field.

Student Outcomes

Student outcomes describe what students are expected to know and be able to do by the time of graduation. The Associate Surveying Engineering Technology program is designed to enable students to:

1. Apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, and technology to solve well-defined engineering problems appropriate to the discipline.
2. Design solutions for well-defined technical problems and assist with the engineering design of systems, components, or processes appropriate to the discipline.
3. Apply written, oral, and graphical communication in well-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.
4. Conduct standard tests, measurements, and experiments and to analyze and interpret the results.
5. Function effectively as a member of a technical team.

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/students/policies-and-rules-for-undergraduate-students/32-00-advising-policy/>)

Wilkes-Barre

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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.

Surveying Engineering Technology, A.ENG.T. 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
ENGL 15 (GWS) ^{††}	3 MATH 110 or 140 (GQ) ^{*††}	4
MATH 40 or 22 and 26	5-6 PHYS 150 or 250 (GN) [†]	3-4
EDSGN 100	3 SUR 122 [*]	3
SUR 121 [*]	3 SUR 132	3
General Education Course	3 CAS 100A or 100B (GWS) ^{††}	3
	17-18	16-17

Second Year

Fall	Credits Spring	Credits
PHYS 151 or 251 (GN)	3-4 ENGL 202C or 202D	3
SUR 221 [*]	3 SUR 222	3
SUR 213	3 SUR 373W [*]	4
SUR 241	3 SUR 382	2
SUR 361	3 General Education Course	3
	General Education Course	3
	15-16	18

Total Credits 66-69

- * 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) and Knowledge Domains (GHW, GN, GA, GH, GS) requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

Career Paths

Graduates from the surveying engineering technology program work at government agencies and private industry companies and specialize in boundary surveying, geodesy, image analysis (photogrammetry and remote sensing), and geographic information systems.

MORE INFORMATION ABOUT POTENTIAL CAREER OPTIONS FOR GRADUATES OF THE SURVEYING ENGINEERING TECHNOLOGY PROGRAM (<http://career.engr.psu.edu/>)

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

Accreditation

The A.ENG.T. in Surveying 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 Surveying/Geomatics 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://opair.psu.edu/plc/dashboard/>) interactive map.

Contact

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