SURVEYING ENGINEERING TECHNOLOGY, A.ENGT.

Begin Campus: Greater Allegheny, 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, and photogrammetric surveying. 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 at Penn State Wilkes-Barre or Structural Design and Construction Engineering Technology at Penn State Harrisburg.

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 67 to 70 credits is required:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
<td>21</td>
</tr>
<tr>
<td>Requirements for the Major</td>
<td>58-61</td>
</tr>
</tbody>
</table>

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.

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.)
- 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 is used to satisfy more than one requirement, the credits from the course can be counted only once.

Foundations or Knowledge Domains
- Any General Education course: 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 a 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 (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
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).

### Prescribed Courses: Require a grade of C or better

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUR 212</td>
<td>Route and Construction Surveying</td>
<td>4</td>
</tr>
<tr>
<td>SUR 222</td>
<td>Photogrammetry</td>
<td>3</td>
</tr>
<tr>
<td>SUR 241</td>
<td>Surveying Measurement Analysis</td>
<td>3</td>
</tr>
<tr>
<td>SUR 262</td>
<td>Coordinate Systems in Map Projections</td>
<td>2</td>
</tr>
<tr>
<td>SUR 313</td>
<td>Integrated Surveying</td>
<td>3</td>
</tr>
<tr>
<td>SUR 362</td>
<td>Introduction to Geospatial Information Engineering</td>
<td>3</td>
</tr>
<tr>
<td>SUR 372W</td>
<td>Legal Aspects of Land Surveying</td>
<td>3</td>
</tr>
<tr>
<td>SUR 111</td>
<td>Plane Surveying</td>
<td>4</td>
</tr>
<tr>
<td>SUR 162</td>
<td>Methods in Large Scale Mapping</td>
<td>3</td>
</tr>
<tr>
<td>SUR 272</td>
<td>Cadastral Surveying</td>
<td>3</td>
</tr>
</tbody>
</table>

### Additional Courses

- CAS 100A: Effective Speech
- or CAS 100B: Effective Speech
- ENGL 15: Rhetoric and Composition
- or ENGL 30H: Honors Rhetoric and Composition
- ENGL 202C: Effective Writing: Technical Writing
- or ENGL 202D: Effective Writing: Business Writing
- MATH 22: College Algebra II and Analytic Geometry
- and Plane Trigonometry
- or MATH 40: Algebra, Trigonometry, and Analytic Geometry
- MATH 110: Techniques of Calculus I
- or MATH 140: Calculus With Analytic Geometry I

Select 3 credits of the following:

- EDSGN 100: Cornerstone Engineering Design
- or EGT 101 & EGT 102 & ET 2: and Introduction to Computer Aided Drafting

Select 3-4 credits of the following:

- PHYS 150: Technical Physics I
- PHYS 211: General Physics: Mechanics
- PHYS 250: Introductory Physics I

Select 3-4 credits of the following:

- PHYS 151: Technical Physics II
- PHYS 212: General Physics: Electricity and Magnetism
- PHYS 251: Introductory Physics II

### Program Educational Objectives

The Associate Surveying Engineering Technology program prepares students with technical and professional skills for the professional practice. Due to their experience in our program, within few years of graduation, we expect our graduates to have the ability to:

1. Proficiently apply basic principles and methods of surveying practice to perform surveys and analyze results
2. Effectively convey technical and professional information in written, verbal, and graphic forms, as individuals and as members of a professional team
3. Demonstrate their recognition of the importance of professional organizations for their development as surveying technologists
4. Demonstrate their recognition of the need for continuous, life-long learning.

### 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/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 2021-22 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 contain suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin).
**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.

<table>
<thead>
<tr>
<th>First Year</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 15 (GWS)†</td>
<td>3</td>
<td>CAS 100A or 100B (GWS)‡</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Arts/Humanities/Social Science elective (GA/GH/GS)</td>
<td>3</td>
<td>Arts/Humanities/Soc Science elective (GA/GH/GS)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MATH 26 (GQ)‡</td>
<td>3</td>
<td>Arts/Humanities/Soc Science elective (GA/GH/GS)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SUR 111*</td>
<td>4</td>
<td>MATH 22 (GQ)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EDSGN 100</td>
<td>3</td>
<td>PHYS 150 (GN)†</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>PSU 8 (Recommended)</td>
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<td>SUR 162*</td>
<td>3</td>
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<tr>
<td><strong>Total Credits</strong></td>
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<td><strong>18</strong></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Second Year</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 110 or 140 (GQ)</td>
<td>4</td>
<td>ENGL 202C or 202D (GWS)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>PHYS 151 (GN)</td>
<td>3</td>
<td>SUR 222</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SUR 212</td>
<td>4</td>
<td>SUR 262</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>SUR 241</td>
<td>3</td>
<td>SUR 313</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SUR 272*</td>
<td>3</td>
<td>SUR 362</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td><strong>17</strong></td>
<td><strong>18</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 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.

**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.

**Accreditation**

This program is accredited by the Engineering Technology Accreditation Commission of ABET, www.abet.org. (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**

**University Park**

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