

# SURVEYING ENGINEERING, B.S.

**Begin Campus:** Wilkes-Barre

**End Campus:** Wilkes-Barre

## Degree Requirements

For the Bachelor of Science degree in Surveying Engineering, a minimum of 127-128 credits is required:

Requirement	Credits
General Education	45
Electives	0-1
Requirements for the Major	108-110

27 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 9 credits of GN courses; 6 credits of GQ courses; 3 credits of GS courses; 9 credits of GWS courses. The remaining 18 General Education credits must be distinct from the Requirements for the Major.

### 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/>).

Code	Title	Credits
<b>Prescribed Courses</b>		
EDSGN 100	Cornerstone Engineering Design	3
MATH 230	Calculus and Vector Analysis	4
MATH 251	Ordinary and Partial Differential Equations	4
PHYS 211	General Physics: Mechanics	4
PHYS 212	General Physics: Electricity and Magnetism	4
PHYS 214	General Physics: Wave Motion and Quantum Physics	2
SUR 132	Surveying Software Analysis Tools	3
SUR 213	Route and Construction Surveying	3
SUR 222	Photogrammetry	3
SUR 341	Adjustment Computations	3
SUR 352	Geometric and Physical Geodesy	3
SUR 361	Surveying Laser Scanning	3
SUR 381	Stormwater Hydraulics and Hydrology	4
SUR 421	Advanced Photogrammetry	3
SUR 441	Data Analysis and Project Design	3
SUR 455	Precise Positioning Systems	3
SUR 471	Professional Aspects of Land Surveying	3
<i>Prescribed Courses: Require a grade of C or better</i>		
MATH 140	Calculus With Analytic Geometry I	4
MATH 141	Calculus with Analytic Geometry II	4
MATH 220	Matrices	2-3
SUR 121	Elementary Surveying	3
SUR 122	Control Surveying	3

SUR 221	Large-scale Mapping Surveys	3
SUR 241	Surveying Measurement Analysis	3
SUR 373W	Cadastral and Legal Aspects of Surveying	4

#### Additional Courses

CE 410	Sustainable Residential Subdivision Design	3
or SUR 482	Land Development Design	
CMPSC 201	Programming for Engineers with C++	3
or CMPSC 200	Programming for Engineers with MATLAB	
STAT 401	Experimental Methods	3-4
or STAT 200	Elementary Statistics	

Select one of the following: 3

ECON 102	Introductory Microeconomic Analysis and Policy	
ECON 104	Introductory Macroeconomic Analysis and Policy	
ECON 14	Principles of Economics	

*Additional Courses: Require a grade of C or better*

CAS 100A	Effective Speech	3
or CAS 100B	Effective Speech	
ENGL 15	Rhetoric and Composition	3
or ENGL 30H	Honors Rhetoric and Composition	
ENGL 202C	Effective Writing: Technical Writing	3
or ENGL 202D	Effective Writing: Business Writing	

#### Supporting Courses and Related Areas

Select 6 credits from the following: 6

CE 300-level courses <sup>1</sup>	
CE 400-level courses <sup>1</sup>	
IE 302	Engineering Economy
SUR 313	Integrated Surveying
SUR 362	Introduction to Geospatial Information Engineering
SUR 424	Monitoring Applications in Surveying
SUR 432	Geospatial Applications in Surveying
SUR 496	Independent Studies
SUR 497	Special Topics

<sup>1</sup> These courses are not offered at Wilkes-Barre campus. They are provided to accommodate concurrent degree students in CE and SURE.

### 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/students/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/>)). For more information, check the Suggested Academic Plan for your intended program.