

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 132 credits is required:

Requirement	Credits
General Education	45
Electives	3-4
Requirements for the Major	110-111

27 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 9 credits of GWS courses; 6 credits of GQ courses; 9 credits of GN courses; 3 credits of GS 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 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/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.)

- **Quantification (GQ):** 6 credits
- **Writing and Speaking (GWS):** 9 credits

Knowledge Domains

- **Arts (GA):** 6 credits
- **Health and Wellness (GHW):** 3 credits
- **Humanities (GH):** 6 credits
- **Social and Behavioral Sciences (GS):** 6 credits
- **Natural Sciences (GN):** 9 credits

Integrative Studies (may also complete a Knowledge Domain requirement)

- **Inter-Domain or Approved Linked Courses:** 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 (<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>).

Code	Title	Credits
Prescribed Courses		
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 212	Route and Construction Surveying	4
SUR 222	Photogrammetry	3
SUR 262	Coordinate Systems in Map Projections	2
SUR 341	Adjustment Computations	3
SUR 351	Geodetic Models	3
SUR 362	Introduction to Geospatial Information Engineering	3
SUR 381	Stormwater Hydraulics and Hydrology	4

SUR 441	Data Analysis and Project Design	3
SUR 455	Precise Positioning Systems	3
SUR 462	Parcel-Based Geospatial Information Systems	3
SUR 471	Professional Aspects of Land Surveying	3
SUR 490	Seminar in Surveying	1
<i>Prescribed Courses: Require a grade of C or better</i>		
CMPSC 201	Programming for Engineers with C++	3
MATH 140	Calculus With Analytic Geometry I	4
MATH 141	Calculus with Analytic Geometry II	4
MATH 220	Matrices	2-3
STAT 200	Elementary Statistics	4
SUR 111	Plane Surveying	4
SUR 162	Methods in Large Scale Mapping	3
SUR 241	Surveying Measurement Analysis	3
SUR 272	Cadastral Surveying	3
SUR 372W	Legal Aspects of Land Surveying	3
Additional Courses		
CE 410	Sustainable Residential Land Development	3
or SUR 482	Land Development Design	
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	
<i>Additional Courses: Require a grade of C or better</i>		
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 ¹		
CE 400-level courses ¹		
SUR 313	Integrated Surveying	
SUR 422	Digital Photogrammetry	
SUR 496	Independent Studies	
SUR 497	Special Topics	

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