POLYMER ENGINEERING AND SCIENCE, B.S.

Begin Campus: Any Penn State Campus
End Campus: Erie

Degree Requirements
For the Bachelor of Science degree in Polymer and Engineering Science, a minimum of 130 credits is required:

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<th>Requirement</th>
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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, 3 credits of GS courses, 9 credits of GN courses.

Per Senate Policy 83.80.5, the college dean or campus chancellor and program faculty may require up to 24 credits of coursework in the major to be taken at the location or in the college or program where the degree is earned.

Requirements for the Major
A grade of C or better is required for all courses in the major. To graduate, 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, 3 credits of GS courses, 9 credits of GN courses.

Per Senate Policy 83.80.5, the college dean or campus chancellor and program faculty may require up to 24 credits of coursework in the major to be taken at the location or in the college or program where the degree is earned.

In the Knowledge Domains, Inter-Domain courses do not meet this requirement.

MATSE 447  Rheology and Processing of Polymers  3
PES 213   Polymer Chemistry Lab               2
PES 305   Fluids/Heat Transfer               3
PES 320   Polymer Sustainability             3
PES 323   Rheology Lab                       2
PES 340   Polymer Characterization           2
PES 341   Polymer Characterization Lab       1
PES 351   Polymer Processing Lab             1
PES 365   Processing for Polymer Product Performance  3
PES 440   Failure Analysis and Characterization  3
PES 441   Failure Analysis Lab               1
PES 446W  Senior Project 1                   1
PES 447W  Senior Project 2                   1
PES 448W  Senior Project 3                   1
PES 460   Polymer Formulation for Processing and Design  3
PHYS 211  General Physics: Mechanics         4
PHYS 212  General Physics: Electricity and Magnetism  4

Additional Courses
Additional Courses: Require a grade of C or better
ECON 102 Introductory Microeconomic Analysis and Policy  3
or ECON 104 Introductory Macroeconomic Analysis and Policy

Supporting Courses and Related Areas
Supporting Courses and Related Areas: Require a grade of C or better
Students majoring in Polymer Engineering and Science must complete a total of 12 credits (4 courses) of 400-level PES technical electives from the approved list. (Except where noted, courses taken to satisfy General Education requirements may not be used to satisfy PES technical elective requirements.)

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/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.