SCIENCE, B.S. (BEHREND)

Begin Campus: Any Penn State Campus
End Campus: Erie

Degree Requirements
For the Bachelor of Science degree in Science, a minimum of 120 credits is required, with at least 15 credits at the 400 level:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
<td>45</td>
</tr>
<tr>
<td>Electives</td>
<td>0-1</td>
</tr>
<tr>
<td>Requirements for the Major</td>
<td>89-90</td>
</tr>
</tbody>
</table>

15 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.

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.

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.)
- 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
Each student must earn at least a grade of C in each 300- and 400-level prescribed, additional, and supporting course.

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).

Common Requirements for the Major (All Options)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111</td>
<td>Experimental Chemistry I</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 112</td>
<td>Chemical Principles II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 113</td>
<td>Experimental Chemistry II</td>
<td>1</td>
</tr>
<tr>
<td>CMPSC 121</td>
<td>Introduction to Programming Techniques</td>
<td>3</td>
</tr>
<tr>
<td>MATH 141</td>
<td>Calculus with Analytic Geometry II</td>
<td>4</td>
</tr>
</tbody>
</table>

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>BIOL 110</td>
<td>Biology: Basic Concepts and Biodiversity</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 110</td>
<td>Chemical Principles I</td>
<td>3</td>
</tr>
</tbody>
</table>
General Science Option (43-46 credits)

Additional Courses
Select one of the following sequences: 8-10

Sequence A
- PHYS 211 General Physics: Mechanics (requires a grade of C or better)
- PHYS 212 General Physics: Electricity and Magnetism
- PHYS 213 General Physics: Fluids and Thermal Physics
- or PHYS 214 General Physics: Wave Motion and Quantum Physics

Sequence B
- PHYS 250 Introductory Physics I (requires a grade of C or better)
- PHYS 251 Introductory Physics II

Supporting Courses and Related Areas
Select 8 credits in a foreign language

Requirements for the Option
Select 4-6 credits

Environmental Studies Option (43-46 credits)

Prescribed Courses
- GEG 160 Mapping Our Changing World 3
- GEG 161 Applied Geographic Information Systems 1

Prescribed Courses: Require a grade of C or better
- BIOL 402W Biological Experimental Design 3

Additional Courses
- CHEM 202 Fundamentals of Organic Chemistry I 3
- or CHEM 227 Analytical Chemistry 3
- STAT 200 Elementary Statistics 3
- or STAT 250 Introduction to Biostatistics 3

Supporting Courses and Related Areas:
Select 6 credits from geosciences 1
Select 9-16 credits from Environmental Studies option program

Supporting Courses and Related Areas: Require a grade of C or better
Select 6 credits of 400-level courses in computer sciences, life sciences, mathematical sciences, or physical sciences

Earth and Space Science Pre-Certification Option (43-46 credits)

Prescribed Courses
- ASTRO 10 Elementary Astronomy 2
- ASTRO 11 Elementary Astronomy Laboratory 1
- GEOSC 2 Historical Geology 3
- GEOSC 20 Planet Earth 3
- GEOSC 40 The Sea Around Us 3
- METEO 3 Weather Revealed: Introductory Meteorology 3

Additional Courses
Select two of the following:
- ASTRO 291 Astronomical Methods and the Solar System 6
- ASTRO 292 Astronomy of the Distant Universe
**GEOG 10**  Physical Geography: An Introduction

**GEOSC 10**  Geology of the National Parks

### Supporting Courses and Related Areas

Select 6 credits from the geosciences 1,2  6

Select at least 6 credits at the 400 level in one of the following areas: computer sciences, life sciences, mathematical sciences, or physical sciences 1  6

Select 10-13 credits (at least 6-9 credits at the 400 level) from the program list 3,4  10-13

### Supporting Courses and Related Areas: Require a grade of C or better

Select at least 6 credits at the 400 level in one of the following areas: computer sciences, life sciences, mathematical sciences, or physical sciences

1. Computer sciences include CENBD and CMPSC; geosciences include GEOG, GEOSC, MATSC, MATSE; life sciences include BIOL, BMB, MICRB; mathematical sciences include MATH and STAT; physical sciences include ASTRO, CHEM, PHYS.

2. In addition to courses used to satisfy the prescribed courses requirement.

3. A student in this major must complete at least 15 credits of 400-level courses and 3 credits of W courses in prescribed, additional, or supporting courses from one of the areas: computer science, life sciences, mathematical sciences, or physical sciences.

4. Students may apply 6 credits of basic ROTC.

### General Science Pre-Certification Option (43-46 credits)

This option is designed to prepare students in pre-certification for teaching general science.

<table>
<thead>
<tr>
<th>Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Prescribed Courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASTRO 10</td>
<td>Elementary Astronomy</td>
<td>2</td>
</tr>
<tr>
<td>ASTRO 11</td>
<td>Elementary Astronomy Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 230W</td>
<td>Biology: Molecules and Cells</td>
<td>4</td>
</tr>
<tr>
<td>GEOSC 2</td>
<td>Historical Geology</td>
<td>3</td>
</tr>
<tr>
<td>GEOSC 20</td>
<td>Planet Earth</td>
<td>3</td>
</tr>
<tr>
<td>GEOSC 40</td>
<td>The Sea Around Us</td>
<td>3</td>
</tr>
<tr>
<td>METEO 3</td>
<td>Weather Revealed: Introductory Meteorology</td>
<td>3</td>
</tr>
<tr>
<td><strong>Additional Courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL 220W</td>
<td>Biology: Populations and Communities</td>
<td>4</td>
</tr>
<tr>
<td>or BIOL 240W</td>
<td>Biology: Function and Development of Organisms</td>
<td></td>
</tr>
<tr>
<td>Select one of the following:</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>CMPSC 122</td>
<td>Intermediate Programming</td>
<td></td>
</tr>
<tr>
<td>MATH 230</td>
<td>Calculus and Vector Analysis</td>
<td></td>
</tr>
<tr>
<td>MATH 250</td>
<td>Ordinary Differential Equations</td>
<td></td>
</tr>
<tr>
<td>STAT 200</td>
<td>Elementary Statistics</td>
<td></td>
</tr>
<tr>
<td><strong>Supporting Courses and Related Areas</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select 10-14 credits (at least 6-9 credits at the 400 level)</td>
<td>10-14</td>
<td></td>
</tr>
<tr>
<td><strong>Supporting Courses and Related Areas: Require a grade of C or better</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select at least 6 credits at the 400 level in one of the following areas:</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>computer sciences, life sciences, mathematical sciences, or physical sciences</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>