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.

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)

Code    | Title                                      | Credits |
--------|--------------------------------------------|---------|
CHEM 111| Experimental Chemistry I                   | 1       |
CHEM 112| Chemical Principles II                     | 3       |
CHEM 113| Experimental Chemistry II                  | 1       |
CMPSC 121| Introduction to Programming Techniques     | 3       |
MATH 141| Calculus with Analytic Geometry II         | 4       |

Prescribed Courses: Require a grade of C or better

Biol 110 | Biology: Basic Concepts and Biodiversity | 4       |
CHEM 110 | Chemical Principles I                     | 3       |
MATH 140 | Calculus With Analytic Geometry I         | 4       |

Additional Courses

Select one of the following sequences: 8-10

Sequence A

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 211</td>
<td>General Physics: Mechanics (requires a grade of C or better)</td>
<td></td>
</tr>
<tr>
<td>PHYS 212</td>
<td>General Physics: Electricity and Magnetism</td>
<td></td>
</tr>
<tr>
<td>PHYS 213</td>
<td>General Physics: Fluids and Thermal Physics</td>
<td></td>
</tr>
<tr>
<td>or PHYS 214</td>
<td>General Physics: Wave Motion and Quantum Physics</td>
<td></td>
</tr>
</tbody>
</table>

Sequence B

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 250</td>
<td>Introductory Physics I (requires a grade of C or better)</td>
<td></td>
</tr>
</tbody>
</table>

Supporting Courses and Related Areas

Select 8 credits in a foreign language 1

Requirements for the Option

Select an option 43-46

1 Proficiency demonstrated by examination or coursework to the level of the second semester; if fewer than 8 credits are needed to reach the required proficiency, students choose selections from program list to total 8 credits.

Requirements for the Option

A maximum of 8 credits of Research (494), Internship (495), or Independent Study (296, 496) may be applied toward credits for graduation in all options.

General Science Option (43-46 credits)

Code    | Title                                      | Credits |
--------|--------------------------------------------|---------|
Additional Courses

Select one of the following: 3-4

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<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>
</tbody>
</table>

Supporting Courses and Related Areas

Select 3 credits from geosciences 1

Select 18 credits (at least 9 credits at the 400 level) in one of the following areas: computer sciences, life sciences, mathematical sciences, or physical sciences 1

Select 18-22 credits (at least 6 credits at the 400 level) from program list

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

2 Students may apply 6 credits of basic ROTC.

Environmental Studies Option (43-46 credits)

Code    | Title                                      | Credits |
--------|--------------------------------------------|---------|
Additional Courses

Select one of the following: 3-4

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 160</td>
<td>Mapping Our Changing World</td>
<td></td>
</tr>
<tr>
<td>GEOG 161</td>
<td>Applied Geographic Information Systems</td>
<td></td>
</tr>
<tr>
<td>BIOL 402W</td>
<td>Biological Experimental Design</td>
<td></td>
</tr>
</tbody>
</table>

Prescribed Courses: Require a grade of C or better

Biol 202 | Fundamentals of Organic Chemistry I        | 3-4     |
CHEM 227  | Analytical Chemistry                        |         |
STAT 200 | Elementary Statistics                       | 3-4     |

Additional Courses

Select one of the following: 3-4

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 220W</td>
<td>Biology: Populations and Communities</td>
<td></td>
</tr>
</tbody>
</table>
Supporting Courses and Related Areas
Select 6 credits from geosciences \(^1\,^2\) 6
Select 9-16 credits from Environmental Studies option program list with at least 6 credits with ECON, ECNS, PLSC, or POLSC designations and at least 5-7 credits at the 400 level \(^3\) 9-16
Select 2-4 credits of 400-level research, internship, field school, or studies abroad \(^4\) 2-4
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 \(^1\) 6

Earth and Space Science Pre-Certification Option (43-46 credits)
This option is designed to prepare students in pre-certification for teaching earth and space science.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescribed Courses</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>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>Additional Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select two of the following:</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>ASTRO 291</td>
<td>Astronomical Methods and the Solar System</td>
<td></td>
</tr>
<tr>
<td>ASTRO 292</td>
<td>Astronomy of the Distant Universe</td>
<td></td>
</tr>
<tr>
<td>GEOG 10</td>
<td>Physical Geography: An Introduction</td>
<td></td>
</tr>
<tr>
<td>GEOSC 10</td>
<td>Geology of the National Parks</td>
<td></td>
</tr>
</tbody>
</table>

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 \(^3\) 6
Select 10-13 credits (at least 6-9 credits at the 400 level) from the \(^4\) 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

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.