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).

**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>MATH 141</td>
<td>Calculus with Analytic Geometry II</td>
<td>4</td>
</tr>
<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>
<tr>
<td>MATH 140</td>
<td>Calculus With Analytic Geometry I</td>
<td>4</td>
</tr>
</tbody>
</table>

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

**Requirements for the Option**
Select an option

**Requirements for the Option**
General Science Option (74 credits)
Available at the following campuses: Abington, Altoona, Berks, Harrisburg, Scranton, University Park, York
Available at the following campuses: University Park

Biological Sciences and Health Professions Option (74 credits)

Select 4 credits of the following:

- BIOL 129 Mammalian Anatomy
- BIOL 141 Introduction to Human Physiology & BIOL 142 and Physiology Laboratory
- BIOL 220W Biology: Populations and Communities
- BIOL 230W Biology: Molecules and Cells
- BIOL 240W Biology: Function and Development of Organisms

Select 3-4 credits of the following:

- STAT 200 Elementary Statistics
- STAT 250 Introduction to Biostatistics
- STAT 301
- STAT 401 Experimental Methods

Select 8-12 credits of the following:

- PHYS 211 General Physics: Mechanics
- PHYS 212 and General Physics: Electricity and Magnetism
- PHYS 213 and General Physics: Fluids and Thermal Physics
- PHYS 214 and General Physics: Wave Motion and Quantum Physics

Select 3 credits of the following:

- BIOL 141 Introduction to Human Physiology & BIOL 142 and Physiology Laboratory

Supporting Courses and Related Areas

A maximum of 12 credits of Independent Study (296, 496) may be applied toward credits for graduation.

Select 21-26 credits from program list (Students may apply 6 credits of ROTC)

Select 3 credits from earth and mineral sciences

Select 3 credits in Global, Social, and Personal Awareness from department approved course list in consultation with adviser

Select 3 credits in Teamwork and Interpersonal Communication from department approved course list in consultation with adviser

Select 6 credits of 400-level courses

Select 18 credits in life, mathematical, or physical sciences, with at least 9 credits at the 400 level

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

Supporting Courses and Related Areas

A maximum of 12 credits of Independent Study (296, 496) may be applied toward credits for graduation.

Select 15 credits from program list for Healthcare/ Medicine/ Ethical Competencies

Select 10-17 credits from program list (Students may apply 6 credits of ROTC)

Select 3 credits in Global, Social, and Personal Awareness from department approved course list in consultation with adviser

Select 3 credits in Teamwork and Interpersonal Communication from department approved course list in consultation with adviser

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

Select 9 credits of 400-level BMB, BIOL, BIOTC, or MICRB courses

Legal Studies, Government Service, Public Policy Option (74 credits)

Available at the following campuses: University Park

Select 4 credits of the following:

- BIOL 129 Mammalian Anatomy
- BIOL 141 Introduction to Human Physiology & BIOL 142 and Physiology Laboratory
- BIOL 220W Biology: Populations and Communities
- BIOL 230W Biology: Molecules and Cells

- STAT 200 Elementary Statistics
- STAT 250 Introduction to Biostatistics
- STAT 301
- STAT 401 Experimental Methods

Select 6-8 credits of the following:

- CHEM 210 Organic Chemistry I & CHEM 212 and Organic Chemistry II & CHEM 213 and Laboratory in Organic Chemistry

Select 3 credits of the following:

- BIOL 222 Genetics
- BIOL 322 Genetic Analysis
- BMB 211 Elementary Biochemistry
- BMB 251 Molecular and Cell Biology I
- MICRB 201 Introductory Microbiology

Select 8-12 credits of the following:

- PHYS 211 General Physics: Mechanics
- PHYS 212 and General Physics: Electricity and Magnetism
- PHYS 213 and General Physics: Fluids and Thermal Physics
- PHYS 214 and General Physics: Wave Motion and Quantum Physics

- PHYS 250 Introductory Physics I & PHYS 251 and Introductory Physics II

Supporting Courses and Related Areas

A maximum of 12 credits of Independent Study (296, 496) may be applied toward credits for graduation.

Select 15 credits from program list for Healthcare/ Medicine/ Ethical Competencies

Select 10-17 credits from program list (Students may apply 6 credits of ROTC)

Select 3 credits in Global, Social, and Personal Awareness from department approved course list in consultation with adviser

Select 3 credits in Teamwork and Interpersonal Communication from department approved course list in consultation with adviser

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

Select 9 credits of 400-level BMB, BIOL, BIOTC, or MICRB courses

Legal Studies, Government Service, Public Policy Option (74 credits)

Available at the following campuses: University Park

Select 4 credits of the following:

- BIOL 129 Mammalian Anatomy
- BIOL 141 Introduction to Human Physiology & BIOL 142 and Physiology Laboratory
- BIOL 220W Biology: Populations and Communities
- BIOL 230W Biology: Molecules and Cells
Biol 240W Biology: Function and Development of Organisms
Select 3-4 credits of the following: 3-4
- STAT 200 Elementary Statistics
- STAT 250 Introduction to Biostatistics
- STAT 301
- STAT 401 Experimental Methods
Select 8-12 credits of the following: 8-12
- PHYS 211 General Physics: Mechanics
& PHYS 212 and General Physics: Electricity and Magnetism
& PHYS 213 and General Physics: Fluids and Thermal Physics
& PHYS 214 and General Physics: Wave Motion and Quantum Physics
- PHYS 250 Introductory Physics I
& PHYS 251 and Introductory Physics II
Supporting Courses and Related Areas
Select 12-17 credits from program list (Students may apply 6 credits of ROTC)
Select 18 credits from program list for Legal Studies, Government Service, Public Policy 2
Select 3 credits in Global, Social, and Personal Awareness from the department approved course list in consultation with adviser.
Select 3 credits in Teamwork and Interpersonal Communication from the department approved course list in consultation with adviser.
Select 9 credits of 400-level BMB, BIOL, BIOTC, or MICRB courses
Select at least 9 credits at the 400 level. Select from department approved course list in consultation with adviser.
Select 18 credits in life, mathematical, or physical sciences, with at least 9 credits at the 400 level. Select from department approved course list in consultation with adviser.

Life Science Option (74 credits)
Available at the following campuses: Abington, Altoona, Berks, Harrisburg, Scranton, University Park, York

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMB 211</td>
<td>Elementary Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>BMB 251</td>
<td>Molecular and Cell Biology I</td>
<td></td>
</tr>
<tr>
<td>MICRB 201</td>
<td>Introductory Microbiology</td>
<td></td>
</tr>
<tr>
<td>CHEM 202</td>
<td>Fundamentals of Organic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 203</td>
<td>Fundamentals of Organic Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 210</td>
<td>Organic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 212</td>
<td>and Organic Chemistry II</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 213</td>
<td>and Laboratory in Organic Chemistry</td>
<td></td>
</tr>
<tr>
<td>PHYS 211</td>
<td>General Physics: Mechanics</td>
<td></td>
</tr>
<tr>
<td>&amp; PHYS 212</td>
<td>and General Physics: Electricity and Magnetism</td>
<td></td>
</tr>
<tr>
<td>&amp; PHYS 213</td>
<td>and General Physics: Fluids and Thermal Physics</td>
<td></td>
</tr>
<tr>
<td>&amp; PHYS 214</td>
<td>and General Physics: Wave Motion and Quantum Physics</td>
<td></td>
</tr>
<tr>
<td>PHYS 250</td>
<td>Introductory Physics I</td>
<td></td>
</tr>
<tr>
<td>&amp; PHYS 251</td>
<td>and Introductory Physics II</td>
<td></td>
</tr>
</tbody>
</table>
Supporting Courses and Related Areas
A maximum of 12 credits of Independent Study 296, 496 may be applied toward credits for graduation.
Select 23-29 credits from program list (Students may apply 6 credits of ROTC)
Select 3 credits in Global, Social, and Personal Awareness
Select 3 credits in Teamwork and Interpersonal Communication
Select 6 credits of 400-level courses
Supporting Courses and Related Areas: Require a grade of C or better
Select 9 credits of 400-level BMB, BIOL, BIOTC, or MICRB courses

Mathematical Science Option (74 credits)
Available at the following campuses: Abington, Altoona

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMPSC 122</td>
<td>Intermediate Programming</td>
<td>3</td>
</tr>
<tr>
<td>MATH 220</td>
<td>Matrices</td>
<td>2-3</td>
</tr>
<tr>
<td>CMPSC 360</td>
<td>Discrete Mathematics for Computer Science</td>
<td>3-4</td>
</tr>
<tr>
<td>MATH 230</td>
<td>Calculus and Vector Analysis</td>
<td>4</td>
</tr>
<tr>
<td>STAT 301</td>
<td>Ordinary and Partial Differential Equations</td>
<td>3</td>
</tr>
</tbody>
</table>
or STAT 318 | Elementary Probability                         |         |
Select 3 credits of the following:

- BMB 211 | Elementary Biochemistry                         | 3       |
- BMB 251 | Molecular and Cell Biology I                    |         |
- MICRB 201 | Introductory Microbiology                     |         |
- CHEM 202 | Fundamentals of Organic Chemistry I            |         |
- CHEM 203 | and Fundamentals of Organic Chemistry II       |         |
- CHEM 210 | Organic Chemistry I                            |         |
& CHEM 212 | and Organic Chemistry II                      |         |
& CHEM 213 | and Laboratory in Organic Chemistry          |         |
Select 8-12 credits of the following: 8-12

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 211</td>
<td>General Physics: Mechanics</td>
<td></td>
</tr>
</tbody>
</table>
& PHYS 212 | and General Physics: Electricity and Magnetism  |         |
& PHYS 213 | and General Physics: Fluids and Thermal Physics|         |
& PHYS 214 | and General Physics: Wave Motion and Quantum Physics |         |
| PHYS 250 | Introductory Physics I                          |         |
& PHYS 251 | and Introductory Physics II                     |         |
Supporting Courses and Related Areas

A maximum of 12 credits of Independent Study (296, 496) may be applied toward credits for graduation.

Select 18-24 credits from program list (Students may apply 6 credits of ROTC)

Select 6 credits of 400-level courses 6
Select 3 credits in Global, Social, and Personal Awareness 3
Select 3 credits in Teamwork and Interpersonal Communication 3

Supporting Courses and Related Areas: Require a grade of C or better
Select 9 credits of 400-level CMPSC, CSE, MATH, or STAT courses 9

1 PHYS 211 and PHYS 250 require a grade of C or better.

Physical Science Option (74 credits)
Available at the following campuses: Altoona

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prescribed Courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASTRO 291</td>
<td>Astronomical Methods and the Solar System</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 212</td>
<td>General Physics: Electricity and Magnetism</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 213</td>
<td>General Physics: Fluids and Thermal Physics</td>
<td>2</td>
</tr>
<tr>
<td>PHYS 214</td>
<td>General Physics: Wave Motion and Quantum Physics</td>
<td>2</td>
</tr>
</tbody>
</table>

Prescribed Courses: Require a grade of C or better

PHYS 211 | General Physics: Mechanics | 4 |

**Additional Courses**
Select 3 credits of the following: 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMB 211</td>
<td>Elementary Biochemistry</td>
<td></td>
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<tr>
<td>BMB 251</td>
<td>Molecular and Cell Biology I</td>
<td></td>
</tr>
<tr>
<td>MICRB 201</td>
<td>Introductory Microbiology</td>
<td></td>
</tr>
</tbody>
</table>

Select 6-8 credits of the following: 6-8

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 210 &amp; CHEM 212 &amp; CHEM 213</td>
<td>Organic Chemistry I and Organic Chemistry II and Laboratory in Organic Chemistry</td>
<td></td>
</tr>
<tr>
<td>MATH 230</td>
<td>Calculus and Vector Analysis</td>
<td>4</td>
</tr>
<tr>
<td>or MATH 251</td>
<td>Ordinary and Partial Differential Equations</td>
<td></td>
</tr>
</tbody>
</table>

Select 3 credits of the following: 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTRO 292</td>
<td>Astronomy of the Distant Universe</td>
<td></td>
</tr>
<tr>
<td>EMCH 211</td>
<td>Statics</td>
<td></td>
</tr>
<tr>
<td>ME 300</td>
<td>Engineering Thermodynamics I</td>
<td></td>
</tr>
<tr>
<td>PHYS 237</td>
<td>Introduction to Modern Physics</td>
<td></td>
</tr>
</tbody>
</table>

**Supporting Courses and Related Areas**
A maximum of 12 credits of Independent Study (296, 496) may be applied toward credits for graduation.

Select 20-22 credits from program list (Students may apply 6 credits of ROTC)

Select 6 credits of 400-level courses 6
Select 3 credits in Global, Social, and Personal Awareness 3
Select 3 credits in Teamwork and Interpersonal Communication 3

Supporting Courses and Related Areas: Require a grade of C or better
Select 9 credits of 400-level ASTRO, CHEM, or PHYS courses 9