SCIENCE, B.S. (UNIVERSITY COLLEGE)

Begin Campus: Any Penn State Campus
End Campus: York, Scranton

Degree Requirements

For the Bachelor of Science degree in Science, a minimum of 124 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>Requirements for the Major</td>
<td>94</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.

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>
</tbody>
</table>

Prescribed Courses: Require a grade of C or better

BIOL 110: Biology: Basic Concepts and Biodiversity
CHEM 110: Chemical Principles I
MATH 140: Calculus with Analytic Geometry I

Requirements for the Option

Select an option

74

Requirements for the Option

General 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>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>
</tbody>
</table>

Prescribed Courses: Require a grade of C or better

BIOL 110: Biology: Basic Concepts and Biodiversity
CHEM 110: Chemical Principles I
MATH 140: Calculus with Analytic Geometry I

Requirements for the Option

Select an option

74

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

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

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

1. PHYS 211 and PHYS 250 require a grade of C or better.
2. Only the 9 credits at the 400 level require a grade of C or better.
3. Physical sciences include ASTRO, CHEM, PHYS; mathematical sciences include CMPSC, MATH, STAT; life sciences include BIOL, BIOTC, BMB, MICRB.

Biological Sciences and Health Professions Option (74 credits)

Available at the following campuses: University Park

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPA 101</td>
<td>Introduction to Health Services Organization</td>
<td>3</td>
</tr>
</tbody>
</table>

Additional Courses

Select 4 credits of the following:

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

Select 3-4 credits of the following:

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

Select 6-8 credits of the following:

CHEM 203: Fundamentals of Organic Chemistry II

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: Introductory Physics II

Select 6 credits of ROTC
CHEM 210 Organic Chemistry I
& CHEM 212 and Organic Chemistry II
& CHEM 213 and Laboratory in Organic Chemistry

Select 3 credits of the following: 3
- 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: 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 1
- PHYS 250 Introductory Physics I
& PHYS 251 Introductory Physics II 2

Select 3 credits of the following: 3
- 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 1
- PHYS 250 Introductory Physics I
& PHYS 251 Introductory Physics II 1

Supporting Courses and Related Areas
Select 12-17 credits from program list (Students may apply 6 credits 2-17 of ROTC) 18
Select 18 credits from program list for Legal Studies, Government Service, Public Policy 2 2
Select 3 credits in Global, Social, and Personal Awareness from department approved course list in consultation with adviser 3
Select 3 credits in Teamwork and Interpersonal Communication from department approved course list in consultation with adviser 3

Supporting Courses and Related Areas: Require a grade of C or better
Select 18 credits in life, mathematical, or physical sciences, with at least 9 credits at the 400 level 34

1 PHYS 211 and PHYS 250 require a grade of C or better.
2 Six credits must be at the 400-level. Select from department approved course list in consultation with adviser.
3 Only the 9 credits at the 400 level require a grade of C or better.
4 Physical sciences include ASTRO, CHEM, PHYS; mathematical sciences include CMPSC, MATH, STAT; life sciences include BIOL, BMB, MICRB.

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

Code | Title |
--- | --- |
BIO 250 | Introductory Microbiology |

Additional Courses
Select 4 credits of the following: 4
- BIOI 220W Biology: Populations and Communities
- BIOI 230W Biology: Molecules and Cells
- BIOI 240W Biology: Function and Development of Organisms

Select 3 credits of the following: 3
- CMPSC 101 Introduction to Programming
- MATH 250 Ordinary Differential Equations
- STAT 250 Introduction to Biostatistics

Select 3 credits of the following: 3
- BMB 211 Elementary Biochemistry
- BMB 251 Molecular and Cell Biology I
- MICRB 201 Introductory Microbiology

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

Legal Studies, Government Service, Public Policy Option (74 credits)
Available at the following campuses: University Park

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

Select 3 credits of the following: 3
- 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: 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 1
- PHYS 250 Introductory Physics I
& PHYS 251 Introductory Physics II 1

Supporting Courses and Related Areas
Select 12-17 credits from program list (Students may apply 6 credits 2-17 of ROTC) 18
Select 18 credits from program list for Legal Studies, Government Service, Public Policy 2 2
Select 3 credits in Global, Social, and Personal Awareness from department approved course list in consultation with adviser 3
Select 3 credits in Teamwork and Interpersonal Communication from department approved course list in consultation with adviser 3

Supporting Courses and Related Areas: Require a grade of C or better
Select 18 credits in life, mathematical, or physical sciences, with at least 9 credits at the 400 level 34

1 PHYS 211 and PHYS 250 require a grade of C or better.
2 Six credits must be at the 400-level. Select from department approved course list in consultation with adviser.
3 Only the 9 credits at the 400 level require a grade of C or better.
4 Physical sciences include ASTRO, CHEM, PHYS; mathematical sciences include CMPSC, MATH, STAT; life sciences include BIOL, BMB, MICRB.

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

Code | Title |
--- | --- |
BIOI 220W | Biology: Populations and Communities |
BIOI 230W | Biology: Molecules and Cells |
BIOI 240W | Biology: Function and Development of Organisms |

Select 4 credits of the following: 4
- CMPSC 101 Introduction to Programming
- MATH 250 Ordinary Differential Equations
- STAT 250 Introduction to Biostatistics

Select 3 credits of the following: 3
- BMB 211 Elementary Biochemistry
- BMB 251 Molecular and Cell Biology I
- MICRB 201 Introductory Microbiology

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

Supporting Courses and Related Areas
Select 12-17 credits from program list (Students may apply 6 credits 2-17 of ROTC) 18
Select 18 credits from program list for Legal Studies, Government Service, Public Policy 2 2
Select 3 credits in Global, Social, and Personal Awareness from department approved course list in consultation with adviser 3
Select 3 credits in Teamwork and Interpersonal Communication from department approved course list in consultation with adviser 3

Supporting Courses and Related Areas: Require a grade of C or better
Select 18 credits in life, mathematical, or physical sciences, with at least 9 credits at the 400 level 34

1 PHYS 211 and PHYS 250 require a grade of C or better.
2 Six credits must be at the 400-level. Select from department approved course list in consultation with adviser.
3 Only the 9 credits at the 400 level require a grade of C or better.
4 Physical sciences include ASTRO, CHEM, PHYS; mathematical sciences include CMPSC, MATH, STAT; life sciences include BIOL, BMB, MICRB.
Select 18-24 credits from program list (Students may apply 6 credits applied toward credits for graduation. A maximum of 12 credits of Independent Study (296, 496) may be applied toward credits for graduation.

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

Supporting Courses and Related Areas
A maximum of 12 credits of Independent Study (296, 496) may be applied toward credits for graduation. Select 9 credits of 400-level courses

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

Supporting Courses and Related Areas: Require a grade of C or better
Select 9 credits of 400-level courses
Select 3 credits in Teamwork and Interpersonal Communication
Select 3 credits in Global, Social, and Personal Awareness

Select 6-8 credits of the following:

Select 3 credits of the following:

Additional Courses
Select 3 credits of the following:

Supporting Courses and Related Areas: Require a grade of C or better
Select 9 credits of 400-level courses
Select 3 credits in Global, Social, and Personal Awareness
Select 3 credits in Teamwork and Interpersonal Communication

Supporting Courses and Related Areas: Require a grade of C or better
Select 9 credits of 400-level courses
Select 3 credits in Global, Social, and Personal Awareness
Select 3 credits in Teamwork and Interpersonal Communication

Supporting Courses and Related Areas: Require a grade of C or better
Select 9 credits of 400-level courses
Select 3 credits in Global, Social, and Personal Awareness
Select 3 credits in Teamwork and Interpersonal Communication

Supporting Courses and Related Areas: Require a grade of C or better
Select 9 credits of 400-level courses
Select 3 credits in Global, Social, and Personal Awareness
Select 3 credits in Teamwork and Interpersonal Communication

Supporting Courses and Related Areas: Require a grade of C or better
Select 9 credits of 400-level courses
Select 3 credits in Global, Social, and Personal Awareness
Select 3 credits in Teamwork and Interpersonal Communication

Supporting Courses and Related Areas: Require a grade of C or better
Select 9 credits of 400-level courses
Select 3 credits in Global, Social, and Personal Awareness
Select 3 credits in Teamwork and Interpersonal Communication

Supporting Courses and Related Areas: Require a grade of C or better
Select 9 credits of 400-level courses
Select 3 credits in Global, Social, and Personal Awareness
Select 3 credits in Teamwork and Interpersonal Communication

Supporting Courses and Related Areas: Require a grade of C or better
Select 9 credits of 400-level courses
Select 3 credits in Global, Social, and Personal Awareness
Select 3 credits in Teamwork and Interpersonal Communication
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