Science, B.S. (Berks)

Begin Campus: Any Penn State Campus
End Campus: Berks

Program Description
A large number of supporting credits permit students to readily include significant breadth or specialization into their undergraduate curriculum. Some examples include minors in business, computer and information science, education, kinesiology, or other fields. The degree allows students throughout the Commonwealth to become familiar with both the theory and the practice of science. It can help prepare students for various careers in pharmaceutical, biotechnology, chemical, medical, and agricultural industries. The degree can also be tailored to meet the specific requirements of professional programs such as medical, dental, or pharmacy schools.

General Science Option
Available at the following campuses: Abington, Berks, Harrisburg, Scranton, University Park, York

The General Science option of the B.S. Science degree allows for the most flexibility.

Achievement in a more specialized set of goals can be met by selecting one of the other B.S. options offered:

General Science Secondary Education Option
Available at the following campuses: Harrisburg

Biological Sciences and Health Professions Option
Available at the following campuses: University Park

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

Life Sciences Option
Available at the following campuses: Abington, Berks, Harrisburg, Scranton, York

Mathematical Sciences Option
Available at the following campuses: Abington

Physical Sciences Option
Currently not available at any campus location

Two-Year Preprofessional Preparation
The first two years of the Science major (62 credits) can meet the preprofessional needs of those interested in admission to some schools of pharmacy, physical therapy, optometry, nursing, and physician assistant training. Successful students can then transfer after two years of undergraduate study to the professional school to which they are admitted. Note, however, that no Penn State degree can be awarded after only two years (62 credits) of study in the Science major. Also, note that the abbreviated two-year curriculum alone does not prepare students for admission to professional schools of general medicine, veterinary medicine, or dental medicine. Consult with your college's health sciences professional adviser for additional information.

What is Science?
The Science major provides a broad and interdisciplinary foundation in the natural sciences. The Science BS program uses the principles of chemistry, physics, and life sciences to understand how these integrate over general areas including biological sciences and health professions, public policy, and science research and development.

You Might Like This Program If...
- You like learning by doing hands-on experiments.
- You are curious about the natural world and how science disciplines come together to explore and understand it.
- You are intrigued by science and desire a career in current and emerging interdisciplinary science disciplines, health professions, or melding science with law, policy or business.

Entrance to Major
In order to be eligible for entrance to the Science major, a student at any location must have:

1. attained at least a 2.00 cumulative grade-point average;
2. completed the following courses with a grade of C or better:
   - BIOL 110
   - CHEM 110
   - MATH 140
3. completed one of the following courses:
   a. BIOL 220W or BIOL 230W or BIOL 240W
   b. PHYS 250 with a grade of C or better

General Science Secondary Education option
Entrance to the General Science Secondary Education option requires the following additional requirements:
- a minimum grade point average of 3.0;
- completion of ENGL 15 or ENGL 30H;
- three credits of literature from a department-approved list with a C or higher grade;
- completion of 6 credits of college-level mathematics (GQ MATH or STAT prefixes) with a C or higher grade;
- satisfy any entrance testing requirements set out by the Pennsylvania Department of Education in effect at the time of application for the major;
- submission to the Teacher Education Office of current and clear background checks as required by the Pennsylvania Department of Education;
- submission of documentation of 20 pre-major fieldwork hours.

Degree Requirements
For the Bachelor of Science degree in Science, a minimum of 125 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>0-10</td>
</tr>
<tr>
<td>Requirements for the Major</td>
<td>85-110</td>
</tr>
</tbody>
</table>

15-30 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. For the General Science Secondary Education
Option, a total of 30 credits are used to satisfy General Education requirements: 9 credits of GN courses; 6 credits of GQ courses; 3 credits of GWS courses; 6 credits of GS courses; and 6 credits of GH 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 (https://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>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>
<tr>
<td>MATH 141</td>
<td>Calculus with Analytic Geometry II</td>
<td>4</td>
</tr>
</tbody>
</table>

Requirements for the Option

Select an option

65-90

Requirements for the Option

General Science Option (70-78 credits)
Available at the following campuses: Abington, Berks, Harrisburg, Scranton, University Park, York

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 200</td>
<td>Elementary Statistics</td>
<td>4</td>
</tr>
</tbody>
</table>

Additional Courses

Select 4 credits from the following:

- BIOL 220W Biology: Populations and Communities
- BIOL 230W Biology: Molecules and Cells
- BIOL 240W Biology: Function and Development of Organisms

Select 8-12 credits from 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 21-25 credits from program list (Students may apply 6 credits of 21-25 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 A grade of C or better per course is required for teacher certification.
2 PHYS 211 and PHYS 250 require a grade of C or better.
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, BIOTC, BMB, MICRB.

General Science Secondary Education Option (90 credits)
Available at the following campuses: Harrisburg

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>STAT 200</td>
<td>Elementary Statistics</td>
<td>4</td>
</tr>
</tbody>
</table>

Prescribed Courses

EDUC 313 Secondary Education Field Experience
EDUC 314 Learning Theory and Instructional Procedures
EDUC 315Y Social and Cultural Factors in Education
EDUC 385 Professional Development in Teaching
EDUC 400 Diversity and Cultural Awareness Practices in the K-12 Classroom
EDUC 414 Teaching Secondary Science
EDUC 458 Behavior Management Strategies for Inclusive Classrooms
EDUC 459 Strategies for Effective Teaching in Inclusive Classrooms
EDUC 490 Student Teaching

Additional Courses

Select 4 credits from the following:

- BIOL 220W Biology: Populations and Communities
- BIOL 230W Biology: Molecules and Cells
- BIOL 240W Biology: Function and Development of Organisms

Supporting Courses and Related Areas

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

Select 3 credits of GH literature from department list

Select a 3 credit EARTH course

Select a 3 credit ASTRO course

Select 9 credits of 400-level earth or physical science courses

Select 12 credits of science or education elective courses

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>STAT 200</td>
<td>Elementary Statistics</td>
<td>4</td>
</tr>
</tbody>
</table>

Prescribed Courses

EDPSY 14 Learning and Instruction
EDUC 466N Foundations of Teaching English as a Second Language
ENGL 202C Effective Writing: Technical Writing
HDFS 239 Adolescent Development
PHYS 250 Introductory Physics I
PHYS 251 Introductory Physics II

Additional Courses

Select 4 credits from the following:

- BIOL 220W Biology: Populations and Communities
- BIOL 230W Biology: Molecules and Cells
- BIOL 240W Biology: Function and Development of Organisms

Supporting Courses and Related Areas

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

Select 3 credits of GH literature from department list

Select a 3 credit EARTH course

Select a 3 credit ASTRO course

Select 9 credits of 400-level earth or physical science courses

Select 12 credits of science or education elective courses
Select 9 credits of 400-level BMB, BIOL, BIOTC, or MICRB courses

Supporting Courses and Related Areas: Require a grade of C or better
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 3 credits in Global, Social, and Personal Awareness from

Select 10-17 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.

Select 15 credits from program list for Healthcare/ Medicine/Ethical
Competencies. 2

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 9

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.

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

Select 4 credits from the following:

Additional Courses

Select 18 credits in life, mathematical, or physical sciences, with at

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
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 18 credits in life, mathematical, or physical sciences, with at
least 9 credits at the 400 level 3,4

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 ASTR, CHEM, PHYS; mathematical
sciences include CMPSC, MATH, STAT; life sciences include BIOL,
BIOTC, BMB, MICRB.

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

Select 4 credits from the following:

Additional Courses

Select 3 credits from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>HPA 101</td>
<td>Introduction to Health Services Organization</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOL 129</td>
<td>Mammalian Anatomy</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 220W</td>
<td>Biology: Populations and Communities</td>
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<tr>
<td>BIOL 230W</td>
<td>Biology: Molecules and Cells</td>
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<tr>
<td>BIOL 240W</td>
<td>Biology: Function and Development of Organisms</td>
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<tr>
<td>BIOL 141</td>
<td>Introduction to Human Physiology</td>
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<tr>
<td>&amp; BIOL 142</td>
<td>and Physiology Laboratory</td>
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<th>Credits</th>
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<tbody>
<tr>
<td>STAT 200</td>
<td>Elementary Statistics</td>
<td></td>
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<tr>
<td>STAT 250</td>
<td>Introduction to Biostatistics</td>
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<tr>
<td>STAT 401</td>
<td>Experimental Methods</td>
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<tr>
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<tbody>
<tr>
<td>CHEM 202</td>
<td>Fundamentals of Organic Chemistry I</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 203</td>
<td>and Fundamentals of Organic Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 210</td>
<td>Organic Chemistry I</td>
<td></td>
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<tr>
<td>&amp; CHEM 212</td>
<td>and Organic Chemistry II</td>
<td></td>
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<tr>
<td>&amp; CHEM 213</td>
<td>and Laboratory in Organic Chemistry</td>
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<tr>
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<th>Credits</th>
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<tr>
<td>BIOL 222</td>
<td>Genetics</td>
<td>3</td>
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<tr>
<td>BIOL 322</td>
<td>Genetic Analysis</td>
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<tr>
<td>BMB 211</td>
<td>Elementary Biochemistry</td>
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<tr>
<td>BMB/MICRB</td>
<td>Molecular and Cell Biology I</td>
<td></td>
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<tr>
<td>251</td>
<td>Introductory Microbiology</td>
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<tr>
<td>MICRB 201</td>
<td>Introductory Microbiology</td>
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<tr>
<th>Code</th>
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<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>PHYS 211</td>
<td>General Physics: Mechanics</td>
<td>8-12</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>
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<tr>
<td>PHYS 250</td>
<td>Introductory Physics I</td>
<td></td>
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<tr>
<td>&amp; PHYS 251</td>
<td>and Introductory Physics II</td>
<td></td>
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</tbody>
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<tr>
<td>PHYS 211</td>
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<tr>
<td>&amp; PHYS 212</td>
<td>and General Physics: Electricity and Magnetism</td>
<td></td>
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<tr>
<td>&amp; PHYS 213</td>
<td>and General Physics: Fluids and Thermal Physics</td>
<td></td>
</tr>
<tr>
<td>&amp; PHYS 214</td>
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<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>
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</tbody>
</table>

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
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 18 credits in life, mathematical, or physical sciences, with at
least 9 credits at the 400 level 3,4

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 ASTR, CHEM, PHYS; mathematical
sciences include CMPSC, MATH, STAT; life sciences include BIOL,
BIOTC, BMB, MICRB.

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

Select 4 credits from the following:

Additional Courses

Select 3 credits from the following:

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<thead>
<tr>
<th>Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>CMPSC 101</td>
<td>Introduction to Programming</td>
<td>3</td>
</tr>
</tbody>
</table>
Select 3 credits from the following:

- MATH 230
- CMPSC 121

Additional Courses

- MATH 220
- CMPSC 122

Prescribed Courses

- STAT/MATH 318 Elementary Probability
  
Select 8-12 credits from 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 18-24 credits from program list (Students may apply 6 credits of ROTC)

Select 6 credits of 400-level courses

Select 3 credits in Global, Social, and Personal Awareness

Select 3 credits in Teamwork and Interpersonal Communication

Select 9 credits of 400-level CMPSC, CSE, MATH, or STAT courses

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

Physical Science Option (74 credits)

Currently not available at any campus location

Supporting Courses and Related Areas

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

Select 6 credits of 400-level courses

Select 3 credits in Global, Social, and Personal Awareness

Select 3 credits in Teamwork and Interpersonal Communication

Select 9 credits of 400-level CMPSC, CSE, MATH, or STAT courses

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

Mathematical Science Option (65-77 credits)

Available at the following campuses: Abington

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 250</td>
<td>Ordinary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>STAT 250</td>
<td>Introduction to Biostatistics</td>
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<tr>
<td></td>
<td><strong>Select 3 credits from the following:</strong></td>
<td></td>
</tr>
<tr>
<td>BMB 211</td>
<td>Elementary Biochemistry</td>
<td></td>
</tr>
<tr>
<td>BMB/MICRB 251</td>
<td>Molecular and Cell Biology I</td>
<td></td>
</tr>
<tr>
<td>MICRB 201</td>
<td>Introductory Microbiology</td>
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</tr>
<tr>
<td></td>
<td><strong>Select 6-8 credits from the following:</strong></td>
<td>6-8</td>
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<tr>
<td>CHEM 202</td>
<td>Fundamentals of Organic Chemistry I</td>
<td></td>
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<tr>
<td>&amp; CHEM 203</td>
<td>and 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>
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<tr>
<td></td>
<td><strong>Select 8-12 credits from the following:</strong></td>
<td>8-12</td>
</tr>
<tr>
<td>PHYS 211</td>
<td>General Physics: Mechanics</td>
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<td>&amp; PHYS 212</td>
<td>and General Physics: Electricity and Magnetism</td>
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<td>and General Physics: Fluids and Thermal Physics</td>
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<td>&amp; PHYS 214</td>
<td>and General Physics: Wave Motion and Quantum Physics</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 211</td>
<td>and Chemical Engineering</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 212</td>
<td>and Physical Chemistry</td>
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<tr>
<td>&amp; CHEM 213</td>
<td>and Laboratory in Organic Chemistry</td>
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<tr>
<td></td>
<td><strong>Select 6 credits of 400-level courses:</strong></td>
<td>6</td>
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<tr>
<td>CHEM 202</td>
<td>Fundamentals of Organic Chemistry I</td>
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<td>&amp; CHEM 203</td>
<td>and Fundamentals of Organic Chemistry II</td>
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<td>CHEM 210</td>
<td>Organic Chemistry I</td>
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<td>&amp; CHEM 212</td>
<td>and Organic Chemistry II</td>
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<tr>
<td>&amp; CHEM 213</td>
<td>and Laboratory in Organic Chemistry</td>
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<tr>
<td></td>
<td><strong>Supporting Courses and Related Areas: Require a grade of C or better</strong></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Select 9 credits of 400-level BMB, BIOL, BIOTC, or MICRB courses</td>
<td></td>
</tr>
</tbody>
</table>

Supporting Courses and Related Areas

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

Select 6 credits of 400-level courses

Select 3 credits in Global, Social, and Personal Awareness

Select 3 credits in Teamwork and Interpersonal Communication

Select 9 credits of 400-level CMPSC, CSE, MATH, or STAT courses

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

Additional Courses

Select 3 credits from the following:

- BMB 211 Elementary Biochemistry
- BMB/MICRB 251 Molecular and Cell Biology I
- MICRB 201 Introductory Microbiology

Select 6-8 credits from the following:

- 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
- MATH 230 Calculus and Vector Analysis
- or MATH 251 Ordinary and Partial Differential Equations

Select 3 credits from the following:

- ASTRO 292 Astronomy of the Distant Universe
- EMCH 211 Statics
- ME 300 Engineering Thermodynamics I
- PHYS 237 Introduction to Modern Physics

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

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 ASTRO, CHEM, or PHYS courses

**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.

**Program Learning Objectives**

- **Biology Concepts:** Students will demonstrate a thorough understanding of biological concepts including cellular organization, genetics, ecology, and physiology.
- **Chemistry Knowledge:** Students will demonstrate a thorough understanding of general and organic chemistry.
- **Communication:** Students will disseminate scientific findings via oral and written communication.
- **Data Analysis:** Students will demonstrate ability to retrieve and analyze scientific data.
- **Ethics:** Students will apply ethical principles to specific areas of scientific research and scientifically important applications with sociological consequences such as clinical trials, animal testing, and environmental concerns.
- **Laboratory Skills:** Students will demonstrate appropriate laboratory skills including scientific technique, maintenance of a laboratory notebook, writing laboratory reports, and adhering to all safety procedures.
- **Scientific Concepts:** Students will demonstrate specific understanding of fundamental scientific concepts including, but not limited to, experimental results, theory development, chemical reactions, physical processes, and cellular function.
- **Scientific Literature:** Students will be able to comprehend and critically interpret primary scientific literature.
# Academic Advising

The objectives of the university’s academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee’s unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (https://senate.psu.edu/policies-and-rules-for-undergraduate-students/32-00-advising-policy/)

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## University Park

Science, B.S. Program  
Beth Johnson  
Director, Science Major  
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University Park, PA 16802  
814-863-3889  
bai107@psu.edu

### Accelerated Science B.S./M.B.A. Program

Beth Johnson

### Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2023-24 academic year. To access previous years’ suggested academic plans, please visit the archive (https://bulletins.psu.edu/undergraduate/archive/) to view the appropriate Undergraduate Bulletin edition (Note: the archive only contains suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin).

#### General Science Option: Science, B.S. at Berks Campus

The course series listed below provides only one of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an Academic Requirements or What If report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

<table>
<thead>
<tr>
<th>First Year</th>
<th>Credits</th>
<th>Second Year</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall</strong></td>
<td></td>
<td><strong>Spring</strong></td>
<td></td>
</tr>
<tr>
<td>ENGL 15 or 30H (GWS)‡</td>
<td>3</td>
<td>CAS 100A or 100B (GWS)‡</td>
<td>3</td>
</tr>
<tr>
<td>MATH 140 (GQ)†#</td>
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<tr>
<td>CHEM 110 (GN)†#</td>
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<td>BIOL 110†#</td>
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<td>PHYS 211†#</td>
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<tr>
<td><strong>Fall</strong></td>
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<td>BIOL 220W, 230W, or 240W</td>
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<td>Program List Selection</td>
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### Third Year

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<tr>
<td>Global, Social &amp; Personal Awareness Selection</td>
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<td>Teamwork &amp; Interpersonal Communication Selection</td>
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<tr>
<td>General Education Course (GA or GH or GS)</td>
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<td>General Education Course (Integrative Studies)</td>
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**Credits:** 15  
**Total Credits 124-125**

### Fourth Year

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<th>Credits</th>
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<tr>
<td>400 Level General Selection</td>
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<tr>
<td>400 Level Life or Math or Physical Science Selection</td>
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<td>General Education Course (GHW)</td>
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<td>General Education Course (Exploration)</td>
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</table>

**Credits:** 13.5  
**Total Credits 124-125**

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US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

---

1. For General Education Course notations, please be sure to include three (3) credits of United States (US) Cultures and three (3) credits of International (IL) Cultures. Consult adviser for details.

2. For the Writing Across The Curriculum Requirement, students must complete this through one of the requirements listed above. Consult adviser for details.

3. For Entrance-to-Major requirements, students must complete two (2) courses from the following: BIOL 110, CHEM 110, and PHYS 211. The following courses are offered Spring Semester only: ENGL 202B, PHYS 213, PHYS 214.

4. For PHYS 211, PHYS 212, PHYS 213, and PHYS 214, PHYS 250 and PHYS 251 may be substituted. PHYS 250 is offered Fall Semester only. PHYS 251 is offered Spring Semester only.

5. For Earth & Mineral Sciences Selection, consult adviser for list.

6. For Life or Math or Physical Science Selection, consult adviser for list.

7. For Program List Selection, consult adviser for list.

8. For 400 Level General Selection, consult adviser for list.

9. For 400 Level Life or Math or Physical Science Selection, consult adviser for list.

10. For Global, Social & Personal Awareness Selection, consult adviser for list.

11. For Teamwork & Interpersonal Communication Selection, consult adviser for list.

---

**University Requirements and General Education Notes:**

- For General Education Course notations, please be sure to include three (3) credits of United States (US) Cultures and three (3) credits of International (IL) Cultures. Consult adviser for details.
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- For Life or Math or Physical Science Selection, consult adviser for list.
- For Program List Selection, consult adviser for list.
- For 400 Level General Selection, consult adviser for list.
- For 400 Level Life or Math or Physical Science Selection, consult adviser for list.
- For Global, Social & Personal Awareness Selection, consult adviser for list.
- For Teamwork & Interpersonal Communication Selection, consult adviser for list.
## Life Science Option: Science, B.S. at Berks Campus

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<td>BIOL 220W, 230W, or 240W</td>
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<tr>
<td>First-Year Seminar</td>
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<td>General Education Course (GHW)</td>
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**Total Credits 16.5**

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<tbody>
<tr>
<td>CMPSC 101, MATH 250, or STAT 250</td>
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<td>ENGL 202A, 202B, 202C, or 202D (GWS)†</td>
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<td>PHYS 251</td>
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**Total Credits 16**

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**Total Credits 15**

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<tr>
<td>General Education Course (Exploration)</td>
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<td>General Education Course (GHW)</td>
<td>1.5</td>
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</table>

**Total Credits 15**

### Total Credits 125

1. Course requires a grade of C or better for the major
2. For the Writing Across The Curriculum Requirement, students must complete this through one of the requirements listed above. Consult adviser for details.
3. For Entrance-to-Major requirements, students must complete two (2) courses from the following: BIOL 110, CHEM 110, and PHYS 211.
4. The following courses are offered Fall Semester only: BIOL 220W, BIOL 230W, CHEM 202, PHYS 250.
5. The following courses are offered Spring Semester only: BIOL 240W, CHEM 203, ENGL 202B, PHYS 251.
6. For PHYS 250 and PHYS 251, PHYS 211, PHYS 212, PHYS 213, and PHYS 214 may be substituted. PHYS 213 and PHYS 214 are offered Spring Semester only.
7. For 400 Level Life Science Selection, consult adviser for list.
8. For Program List Selection, consult adviser for list.
9. For 400 Level General Selection, consult adviser for list.
10. For CHEM 210, CHEM 212, and CHEM 213, CHEM 202 and CHEM 203 may be substituted.
11. For Global, Social & Personal Awareness Selection, consult adviser for list.
12. For Teamwork & Interpersonal Communication Selection, consult adviser for list.

### University Requirements and General Education Notes:

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### Career Paths

Penn State students with a BS in Science are prepared for a broad range of careers and graduate programs. The solid foundation of science and math prepares students to think critically and scientifically in a range of industries and professions.

### Careers

This program often leads to careers in all healthcare professions, including physicians and physician assistants, dentists, optometrists, and podiatrists; laboratory research associates; scientific product representatives and science-based consulting.

### Opportunities for Graduate Studies

Many graduates of the Science B.S. program choose to pursue graduate studies (MS and PhD) in the natural sciences. Most often, students gravitate to medically-related fields and life science sub-disciplines for focused graduate training. Students in the legal studies and public policy options may choose law school or master’s in public policy programs.
Professional Resources

- Association of American Medical Colleges (https://www.aamc.org)
- American Association of Colleges of Osteopathic Medicine (https://www.aacom.org)
- American Dental Education Association (https://www.adea.org)
- Association of Schools and Colleges of Optometry (https://optometriceducation.org)
- American Association of Colleges of Podiatric Medicine (https://aacpm.org)

Contact

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DIVISION OF SCIENCE
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https://berks.psu.edu/academics/bs-science

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https://www.york.psu.edu/academics/baccalaureate/science