SCIENCE, B.S. (ABINGTON)

Begin Campus: Any Penn State Campus

End Campus: Abington

Program Description
Not all options are available at every campus. Contact the campus you are interested in attending to determine which options are offered.

The Science major is an interdisciplinary degree that aims to provide a broad, general education in science. The bachelor of science (B.S.) curriculum is designed specifically for students who have education goals relating to scientific theory and practice and who require a high degree of flexibility to obtain their educational objectives. After completing foundation courses in calculus, chemistry, physics, and the life sciences, students will select additional science courses from designated areas. 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, biotechnical, 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. 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.

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: Altoona, Berks, Harrisburg, Scranton, University Park, York

Mathematical Sciences Option
Available at the following campuses: Altoona

Physical Sciences Option
Available at the following campuses: Altoona

Not all of these options are available at all locations, and there are minor distinctions of the core curriculum at some locations, so see the Science program director at your College for further details.

Two-Year Preprofessional Preparation
The first two years of the Science major (62 credits) can meet the pre professional 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.

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 MATH 140 with a grade of C or better;
3. completed at least two of the following courses, BIOL 110; CHEM 110; PHYS 211 or PHYS 250, with a grade of C or better.

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>

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 (http://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

15 of these 45 credits are included in the Requirements for the Major.

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

This includes 15 credits of General Education courses: 9 credits of GN courses; 6 credits of GQ courses.

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>Prescribed Courses: Require a grade of C or better</td>
<td></td>
<td></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>BIOL 110</td>
<td>Biology: Basic Concepts and Biodiversity</td>
<td>4</td>
</tr>
</tbody>
</table>

Requirements for the Option

Select an option

74

Requirements for the Option

General Science Option (74 credits)

Available at the following campuses: Altoona, Berks, Harrisburg, Scranton, University Park, York

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select 4 credits of the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL 129</td>
<td>Mammalian Anatomy</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 220W</td>
<td>Biology: Populations and Communities</td>
<td></td>
</tr>
<tr>
<td>BIOL 230W</td>
<td>Biology: Molecules and Cells</td>
<td></td>
</tr>
<tr>
<td>BIOL 240W</td>
<td>Biology: Function and Development of Organisms</td>
<td></td>
</tr>
<tr>
<td>BIOL 141</td>
<td>Introductory Physiology</td>
<td></td>
</tr>
<tr>
<td>&amp; BIOL 142</td>
<td>and Physiology Laboratory</td>
<td></td>
</tr>
<tr>
<td>Select 3-4 credits of the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT 200</td>
<td>Elementary Statistics</td>
<td></td>
</tr>
<tr>
<td>STAT 250</td>
<td>Introduction to Biostatistics</td>
<td></td>
</tr>
<tr>
<td>STAT 301</td>
<td>Statistical Analysis I</td>
<td></td>
</tr>
<tr>
<td>STAT 401</td>
<td>Experimental Methods</td>
<td></td>
</tr>
<tr>
<td>Select 8-12 credits of the following:</td>
<td></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>
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<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 21-26 credits from program list (Students may apply 6 credits of ROTC)

Select 3 credits from earth and mineral sciences                      | 3       |
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       |
Select 6 credits of 400-level courses                                 | 6       |
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                         | 18      |
PHYS 211 and PHYS 250 require a grade of C or better.

Only the 9 credits at the 400 level require a grade of C or better.

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>
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</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: 4

- 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  Introductory Physiology
  & BIOL 142  and Physiology Laboratory

Select 3-4 credits of the following: 3-4

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

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

- CHEM 210  Organic Chemistry I
  & CHEM 212  and Organic Chemistry II
  & CHEM 213  and Laboratory in Organic Chemistry
- CHEM 202  Fundamentals of Organic Chemistry I
  & CHEM 203  and Fundamentals of Organic Chemistry II

Select 3 credits of the following: 3

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

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

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**

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<tr>
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</tr>
</thead>
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<td>BIOL 129</td>
<td>Mammalian Anatomy</td>
<td>4</td>
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<tr>
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</table>
  & BIOL 142  and Physiology Laboratory

Select 3-4 credits of the following: 3-4

- STAT 200  Elementary Statistics
- STAT 250  Introduction to Biostatistics
- STAT 301  Statistical Analysis I
- 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 to 12-17 of ROTC) 15

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

Six credits must be at the 400-level. Select from department approved course list in consultation with adviser.

### Life Science Option (74 credits)

**Available at the following campuses: Altoona, Berks, Harrisburg, Scranton, University Park, York**
### Mathematical 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>CMPSC 122</td>
<td>Intermediate Programming</td>
<td>3</td>
</tr>
<tr>
<td>MATH 220</td>
<td>Matrices</td>
<td>2-3</td>
</tr>
</tbody>
</table>

**Additional Courses**

Select 3 credits of the following:

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

Select 3 credits of the following:

- CMPSC 121  Introduction to Programming Techniques

**Prescribed Courses**

Select 6-8 credits of the following:

- CHEM 210  Organic Chemistry I (and Organic Chemistry II)
- CHEM 213  and Laboratory in Organic Chemistry

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

**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 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)

**Available at the following campuses: Altoona**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<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**

Select 3 credits of the following:

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

Select 6-8 credits of the following:

- CHEM 210  Organic Chemistry I (and Organic Chemistry II)
- CHEM 213  and Laboratory in Organic Chemistry

Select 3 credits in Teamwork and Interpersonal Communication

Select 3 credits in Global, Social, and Personal Awareness

Select 3 credits of the following:

- CMPSC 121  Introduction to Programming Techniques
- MATH 230  Calculus and Vector Analysis
- or MATH 251  Ordinary and Partial Differential Equations

**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 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.
Accelerated Science B.S./M.B.A. Program (SCBUS_BS)

Students must begin and complete the Accelerated Science B.S./M.B.A. Program at the University Park campus.

Students admitted to this special cooperative program between the Eberly College of Science and The Smeal College of Business will be able to combine a Bachelor of Science degree in the Science major, with a Master of Business Administration degree. Highly motivated students, who enter the University with a sufficient number and proper distribution of AP credits, will have the opportunity to complete the requirements for both programs within five years.

What is the Accelerated Science B.S./M.B.A. Program?
The Accelerated Science B.S./M.B.A. Program is designed to educate the leaders in scientific industry, by providing students with a rigorous science background and undergraduate degree along with a graduate degree in business administration.

You Might Like This Program If...
- You love studying science, but don't necessarily want a career in a laboratory.
- You enjoy coursework in multiple science disciplines and in business.
- You aspire to leadership roles.
- You enjoy working with others on a daily basis.
- You want the opportunity to move into a leadership role early in your career.

Program Requirements
The B.S. degree in the Science major General Science option, will be conferred upon satisfactory completion of:

1. The first semester of course work in The Smeal College of Business M.B.A. program (i.e., a minimum of 12 graduate credits).
2. A minimum of 112 acceptable undergraduate credits, which must include:

<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</td>
<td>3</td>
</tr>
<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>CMPS 203</td>
<td>Introduction to Spreadsheets and Databases</td>
<td>4</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>
<tr>
<td>STAT 200</td>
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</tr>
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<td>Experimental Methods</td>
<td>3</td>
</tr>
<tr>
<td>SC 295</td>
<td>Science Co-op Work Experience I</td>
<td>1-3</td>
</tr>
<tr>
<td>SC 395</td>
<td>Science Co-op Work Experience II</td>
<td>1-3</td>
</tr>
<tr>
<td>SC 495</td>
<td>Science Co-op Work Experience III</td>
<td>1-3</td>
</tr>
<tr>
<td>ECON 102</td>
<td>Introductory Microeconomic Analysis and Policy</td>
<td>3</td>
</tr>
<tr>
<td>ECON 104</td>
<td>Introductory Macroeconomic Analysis and Policy</td>
<td>3</td>
</tr>
<tr>
<td>ACCTG 211</td>
<td>Financial and Managerial Accounting for Decision</td>
<td>4</td>
</tr>
</tbody>
</table>

Select supporting courses and related areas selected from the program list 4-23

1. The University's General Education requirements in the areas of Writing and Speaking (9), Health and Physical Activity (3), Arts (6), Humanities (6). The University's General Education requirements in the areas of Quantification, Natural Sciences, and Social and Behavioral Sciences will be satisfied by course work listed under headings “3” and “6.”

2. These requirements may be double counted in order to satisfy other requirements in the program.

3. Course requires a grade of C or better.

4. Only the 9 credits at the 400 level require a grade of C or better.
Students must complete three Eberly College of Science Cooperative Education experiences, including at least one experience which is a full semester in length.

Career Paths
Graduates with a B.S. in Science and a Master’s degree in Business Administration have successfully established careers in the science and business industries. Graduates of this unique integrated undergraduate-graduate program (IUG) are equipped to step into leadership roles instead of the more common entry-level positions of their peers. This accelerates the careers of our graduates, which leads to greater impact and higher earning potential over a lifetime.

Careers
Graduates of the B.S./M.B.A. program have pursued careers in a number of industries including, but not limited to the following:

- Consulting
- Finance
- Healthcare
- Manufacturing
- Marketing
- Medical Devices
- Pharmaceuticals
- Technology

Opportunities for Graduate Studies
For more information on the M.B.A curriculum, please visit the Smeal College of Business website (https://mba.smeal.psu.edu).

Program Learning Objectives
1. Have a basic knowledge of the fundamental concepts in molecular, organismal, and population biology.
2. Demonstrate the ability to use scientific and quantitative reasoning.
3. Demonstrate the ability to retrieve scientific information, analyze scientific data, and use computers and scientific equipment in a laboratory setting.
4. Demonstrate the ability to disseminate scientific findings through oral and written communication.
5. Demonstrate the ability to work cooperative in teams.

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 need to plan the chosen program of study, and referrals to other specialized resources.

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

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Suggested Academic Plan

General Option at Abington 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>Fall</th>
<th>Credits</th>
<th>Spring</th>
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<tbody>
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<td>3</td>
<td>MATH 141 (GQ)†</td>
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<td>BIOL 240W (GN)</td>
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<td>BIOL 110 (GN)†</td>
<td>4</td>
<td>CHEM 112 (GN)†</td>
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<td>CAS 100A or 100B (GWS)</td>
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<td>400-Level Selection</td>
<td>3 General Education Course</td>
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<td>Global, Social, and Personal Awareness</td>
<td>3 400-Level Science*</td>
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<tr>
<td>General Education Course</td>
<td>3 Teamwork and Interpersonal Communication</td>
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<td>3 Elective</td>
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<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
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<tbody>
<tr>
<td>400-Level Science*</td>
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<td>Physical, Mathematical, or Life Science Course</td>
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<td>15-16</td>
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</table>

| | | | |
| Total Credits 123-125 |

* Course requires a grade of C or better for the major
‡ Course requires a grade of C or better for General Education
# Course is an Entrance to Major requirement
† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy University 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.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of 'C' or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

Disallowed Courses

Students may select free elective courses from nearly the entire range of the University’s offerings. However, the following courses may NOT be used to satisfy degree requirements in the Biology major, regardless of option, not even as free electives.

- BIOL 011**, 012**
- BISC 001, 002, 003**, 004**
- BMB 001**
- CHEM 001, 003, 101, 108
- CMPSC 001, 100, 110
- ENGL 004, 005
- LL ED 005, 010
- MATH 001, 002, 003, 004, 017, 018, 021, 022, 026, 030, 035, 036, 040, 041, 081, 082, 083, 110, 111, 200
- MICRB 120, 121A, 121B, 150 151A, 151C, 151D, 151E, 151F, 151W
- PHYS 001, 150, 151
- STAT 004, 126
- STAT 100
In addition, the following types of courses may NOT be used to satisfy degree requirements in the Biology major:

- Courses which are remedial in nature or which focus on reading improvement or study skills. NOTE: Only 3 credits of CHEM 017 and only 4 credits of MATH 140A may be used to satisfy degree requirements.

- Courses which substantially duplicate the subject matter covered in other completed courses taught at a comparable level.

- No more than 6 credits of ROTC and 12 credits of Independent Study (296, 496) may be used to satisfy degree requirements. Unless special permission is granted, Independent Study credit may only be used in the “Free Electives” category.

- No more than 5 credits of KINES may be used to satisfy degree requirements.

- ** On rare occasions, with adequate justification, a student may be permitted to use one or more of these courses to satisfy degree requirements. A petition must be submitted to request such an exception and will be considered on a case-by-case basis.

Life Sciences Option at Abington 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 Plan 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.

First Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENGL 15 or 30 (GWS)</td>
<td>3</td>
<td>MATH 141 (GQ)†</td>
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<td>MATH 140 (GQ)††</td>
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<td>BIOL 240W (GN)</td>
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<td>BIOL 110 (GN)††</td>
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<td>CHEM 112 (GN)††</td>
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<td>CHEM 110 (GN)††</td>
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<td>CHEM 111 (GN)§</td>
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<td>General Education Health &amp; Wellness (GHW)</td>
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Second Year

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<td>CHEM 212</td>
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<td>CHEM 210</td>
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Third Year

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<th>Spring</th>
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<tr>
<td>400-Level Science*</td>
<td>3</td>
<td>General Education Course</td>
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<tr>
<td>400-Level Selection</td>
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Fourth Year

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<th>Spring</th>
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<td>400-Level Science*</td>
<td>3</td>
<td>BMB 211 or MICRB 201</td>
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<td>400-Level Selection</td>
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<td>General Education Course</td>
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<tr>
<td>**</td>
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Total Credits 127-128

* Course requires a grade of C or better for the major
†‡ Course requires a grade of C or better for General Education
# Course is an Entrance to Major requirement
† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

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Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

Additional Notes

Students must take ONE of the following courses: BIOL 220W (GN), BIOL 230W (GN), or BIOL 240W (GN).

Disallowed Courses

Students may select free elective courses from nearly the entire range of the University’s offerings. However, the following courses may NOT be used to satisfy degree requirements in the Biology major, regardless of option, not even as free electives.

BIOL 011**, 012**
BISC 001, 002, 003**, 004**
BMB 001**
CHEM 001, 003, 101, 108
CMPSC 001, 100, 110
ENGL 004, 005
Science, B.S. (Abington)

In addition, the following types of courses may NOT be used to satisfy degree requirements in the Biology major:

- Courses which are remedial in nature or which focus on reading improvement or study skills. NOTE: Only 3 credits of CHEM 017 and only 4 credits of MATH 140A may be used to satisfy degree requirements.

- Courses which substantially duplicate the subject matter covered in other completed courses taught at a comparable level.

- No more than 6 credits of ROTC and 12 credits of Independent Study (296, 496) may be used to satisfy degree requirements. Unless special permission is granted, Independent Study credit may only be used in the “Free Electives” category.

- No more than 5 credits of KINES may be used to satisfy degree requirements.

- ** On rare occasions, with adequate justification, a student may be permitted to use one or more of these courses to satisfy degree requirements. A petition must be submitted to request such an exception and will be considered on a case-by-case basis.

**Math Option at Abington 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.

### First Year

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<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENGL 15 or 30 (GWS)</td>
<td>3</td>
<td>MATH 141 (GQ)†</td>
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<td>MATH 140 (GQ)†</td>
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### Second Year

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<td>MATH 311W or CMPSC 360</td>
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<td>PHYS 250 or 211 (GN)†</td>
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### Third Year

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<td>MATH 411</td>
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<td>MATH 412 or 418</td>
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<td>General Education Course</td>
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<td>MATH 451</td>
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<td>MATH 455 or 415</td>
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<td>MATH 484, 436, 449, 450, or 497</td>
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<td>BMB 211 or MICRB 201</td>
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| Total Credits | 123-126 |

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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 (http://www.adea.org)
- Association of Schools and Colleges of Optometry (https://optometriceducation.org)
- American Association of Colleges of Podiatric Medicine (http://www.aacpm.org)

Contact
Abington
DIVISION OF SCIENCE & ENGINEERING
1600 Woodland Road
Abington, PA 19001
215-881-7492
epl1@psu.edu
http://abington.psu.edu/science

Altoona
DIVISION OF MATHEMATICS AND NATURAL SCIENCES
101 Elm Building
3000 Ivyside Park
Altoona, PA 16601
814-949-5496
epl1@psu.edu
http://altoona.psu.edu/academics/bachelors-degrees/science/request-information

Berks
DIVISION OF SCIENCE
Luerssen Science Building
Reading, PA 19610
610-396-6185
ias1@psu.edu
http://berks.psu.edu/bs-science

Harrisburg
SCHOOL OF SCIENCE, ENGINEERING, AND TECHNOLOGY
Science & Tech Building, 177 TL
Middletown, PA 17057
717-948-6358
tlh46@psu.edu
http://harrisburg.psu.edu/science-engineering-technology/biology-science/bachelor-science-science

Scranton
211 Dawson Building
Dunmore, PA 18512
570-963-2529
mih10@psu.edu
http://worthingtonscrannt.psue.edu/science-program

University Park
Science, B.S. Program
SCIENCE DEGREE
225B Ritenour Building
University Park, PA 16802
814-865-7620
ram29@psu.edu
http://science.psu.edu/sciencebs

University Park
Accelerated Science B.S./M.B.A. Program
SCIENCE B.A./M.B.A.
24 Ritenour Building
University Park, PA 16802
814-863-2011
dsb30@psu.edu
http://science.psu.edu/bsmba

York
1 Elias Science Building
York, PA 17403
717-718-6705
amv12@psu.edu
http://york.psu.edu/academics/baccalaureate/science