**BIOLOGY, B.S. (ALTOONA)**

**Begin Campus:** Any Penn State Campus  
**End Campus:** Altoona

**Program Description**

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

Biology is the scientific study of life: the diversity and organization of organisms, from single-celled bacteria to multi-cellular plants and animals, including humans. These different levels of biological organization range from the molecules and cells that compose an organism, to the interacting organisms that make up an ecosystem. Hands-on experiences, from designing and conducting lab experiments to making field observations, using many different procedures and instruments, play an important role in gaining biological knowledge. Basic research in Biology provides many benefits. Faculty in the Biology Department at Penn State are exploring ways to cure neurological diseases, to conserve coral populations in tropical oceans, to discover more efficient ways to use plants for food and bioenergy, to develop vaccines for infectious diseases, and investigating many other facets of Biology, all with the goal of positively impacting humans and the environment.

**You Might Like This Program If...**

- You are interested in learning about aspects of the biology of organisms that live on Earth.
- You enjoy a dynamic field of study, with new discoveries being made every day.
- You are interested in hands-on experiences, including courses with integrated laboratories and conducting research with faculty.
- You plan to pursue a career in biology research, education or outreach, or attend professional school in areas including medicine and dentistry.

**Entrance Requirements**

In order to be eligible for entrance to the Biology major, a student must have:

1. attained at least a 2.00 cumulative grade point average;  
2. completed BIOL 110, CHEM 110, MATH 140, and earned a grade of C or better in each of these courses; and  
3. completed at least one of the following courses with a grade of C or better: BIOL 220W, BIOL 230W, or BIOL 240W.

**Degree Requirements**

For the Bachelor of Science degree in Biology, a minimum of 124 credits is required:

<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.

**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](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

**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](http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#83-80)). For more information, check the Suggested Academic Plan for your intended program.

**Requirements for the Major**
To graduate, a student enrolled in the major must earn a grade of C or better in each course designated by the major as a C-required course, as specified by Senate Policy 82-44 [http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44](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>
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<tbody>
<tr>
<td>CHEM 111</td>
<td>Experimental Chemistry I</td>
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<tr>
<td>CHEM 113</td>
<td>Experimental Chemistry II</td>
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<tr>
<td>MATH 141</td>
<td>Calculus with Analytic Geometry II</td>
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*Prescribed Courses: Require a grade of C or better*

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>BIOL 110</td>
<td>Biology: Basic Concepts and Biodiversity</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 220W</td>
<td>Biology: Populations and Communities</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 230W</td>
<td>Biology: Molecules and Cells</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 240W</td>
<td>Biology: Function and Development of Organisms</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 110</td>
<td>Chemical Principles I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 112</td>
<td>Chemical Principles II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 140</td>
<td>Calculus With Analytic Geometry I</td>
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**Additional Courses**
Select one of the following: 8-12

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>PHYS 211</td>
<td>General Physics: Mechanics and General Physics: Electricity and Magnetism and General Physics: Fluids and Thermal Physics and General Physics: Wave Motion and Quantum Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 250</td>
<td>Introductory Physics I and Introductory Physics II</td>
<td>4</td>
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Select one of the following: 3-4

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>STAT 200</td>
<td>Elementary Statistics</td>
<td>3</td>
</tr>
<tr>
<td>STAT 240</td>
<td>Introduction to Biometry</td>
<td>1</td>
</tr>
<tr>
<td>STAT 250</td>
<td>Introduction to Biostatistics</td>
<td>1</td>
</tr>
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</table>

**Requirements for the Option**
Select an option 46-51

**Ecology Option (46-51 credits)**

Available at the following campuses: Altoona, University Park

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOL 463</td>
<td>General Ecology</td>
<td>3</td>
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</tbody>
</table>

**Additional Courses**
Select a minimum of 15 credits of 400-level biology courses, with at least 6 credits from the Ecology group, 3 credits from the Evolution group, and 3 credits from the Practicum group. A maximum of 3 credits of BIOL 400, 494, 495, 496, and SC 295, 395, 495 may be used to fulfill 15 credits minimum in the 400-level biology course requirements.

**Ecology Group:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>BIOL 406</td>
<td>Symbiosis</td>
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</tr>
<tr>
<td>BIOL 412</td>
<td>Ecology of Infectious Diseases</td>
<td></td>
</tr>
<tr>
<td>BIOL 415</td>
<td>Ecotoxicology</td>
<td></td>
</tr>
<tr>
<td>BIOL 417</td>
<td>Invertebrate Zoology</td>
<td></td>
</tr>
<tr>
<td>BIOL 419</td>
<td>Ecological and Environmental Problem Solving</td>
<td>15</td>
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<tr>
<td>BIOL/PPEM 425</td>
<td>Biology of Fungi</td>
<td></td>
</tr>
<tr>
<td>BIOL 429</td>
<td>Animal Behavior</td>
<td></td>
</tr>
<tr>
<td>BIOL 435</td>
<td>Ecology of Lakes and Streams</td>
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</tr>
<tr>
<td>BIOL 436</td>
<td>Population Ecology and Global Climate Change</td>
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<tr>
<td>BIOL 438</td>
<td>Theoretical Population Ecology</td>
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</tr>
<tr>
<td>BIOL 444</td>
<td>Field Ecology</td>
<td></td>
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<tr>
<td>BIOL 446</td>
<td>Physiological Ecology</td>
<td></td>
</tr>
<tr>
<td>BIOL 450W</td>
<td>Experimental Field Biology</td>
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</tr>
<tr>
<td>BIOL 464</td>
<td>Sociobiology</td>
<td></td>
</tr>
<tr>
<td>BIOL 474</td>
<td>Astrobiology</td>
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<tr>
<td>BIOL 482</td>
<td>Coastal Biology</td>
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</tr>
<tr>
<td>BIOL 499A</td>
<td>Tropical Field Ecology</td>
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**Evolution Group:**

<table>
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<th>Code</th>
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<tbody>
<tr>
<td>BIOL 405</td>
<td>Molecular Evolution</td>
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</tr>
<tr>
<td>BIOL 406</td>
<td>Symbiosis</td>
<td></td>
</tr>
<tr>
<td>BIOL 411</td>
<td>Medical Embryology</td>
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<tr>
<td>BIOL 414</td>
<td>Taxonomy of Seed Plants</td>
<td></td>
</tr>
<tr>
<td>BIOL 417</td>
<td>Invertebrate Zoology</td>
<td></td>
</tr>
<tr>
<td>BIOL 420</td>
<td>Paleobotany</td>
<td></td>
</tr>
<tr>
<td>BIOL 421</td>
<td>Comparative Anatomy of Vertebrates</td>
<td></td>
</tr>
<tr>
<td>BIOL 422</td>
<td>Advanced Genetics</td>
<td></td>
</tr>
<tr>
<td>BIOL/PPEM 425</td>
<td>Biology of Fungi</td>
<td></td>
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<tr>
<td>BIOL 427</td>
<td>Evolution</td>
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<tr>
<td>BIOL 428</td>
<td>Population Genetics</td>
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<td>BIOL 429</td>
<td>Animal Behavior</td>
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<tr>
<td>BIOL 432</td>
<td>Developmental Genetics</td>
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<tr>
<td>BIOL 433</td>
<td>Evolution of Vertebrates</td>
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<tr>
<td>Code</td>
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<tr>
<td>BIOL 434</td>
<td>Pathobiology of Emerging Infectious Disease</td>
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<tr>
<td>BIOL 436</td>
<td>Population Ecology and Global Climate Change</td>
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<tr>
<td>BIOL 438</td>
<td>Theoretical Population Ecology</td>
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<tr>
<td>BIOL 439</td>
<td>Practical Bioinformatics</td>
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<tr>
<td>BIOL 443</td>
<td>Evo-devo: Evolution of Developmental Mechanisms</td>
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<td>BIOL 446</td>
<td>Physiological Ecology</td>
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<tr>
<td>BIOL 451</td>
<td>Biology of RNA</td>
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<tr>
<td>BIOL 460</td>
<td>Human Genetics</td>
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<td>BIOL 463</td>
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<tr>
<td>BIOL 464</td>
<td>Sociobiology</td>
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<tr>
<td>BIOL 474</td>
<td>Astrobiology</td>
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<tr>
<td>BIOL 478</td>
<td>COMPARATIVE NEUROANATOMY</td>
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</tr>
<tr>
<td>BIOL 400</td>
<td>Teaching in Biology</td>
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<tr>
<td>BIOL 402W</td>
<td>Biological Experimental Design</td>
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<tr>
<td>BIOL 407</td>
<td>Plant Developmental Anatomy</td>
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<tr>
<td>BIOL 414</td>
<td>Taxonomy of Seed Plants</td>
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<td>Invertebrate Zoology</td>
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<tr>
<td>BIOL 419</td>
<td>Ecological and Environmental Problem Solving</td>
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<tr>
<td>BIOL 421</td>
<td>Comparative Anatomy of Vertebrates</td>
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<td>BIOL 422</td>
<td>Advanced Genetics</td>
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<tr>
<td>BIOL/PPEM</td>
<td>Biology of Fungi</td>
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<tr>
<td>BIOL 433</td>
<td>Evolution of Vertebrates</td>
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<td>BIOL 437</td>
<td>Histology</td>
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<td>BIOL 439</td>
<td>Practical Bioinformatics</td>
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<tr>
<td>BIOL 444</td>
<td>Field Ecology</td>
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</tr>
<tr>
<td>BIOL 450W</td>
<td>Experimental Field Biology</td>
<td></td>
</tr>
<tr>
<td>BIOL 461</td>
<td>Contemporary Issues in Science and Medicine</td>
<td></td>
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<tr>
<td>BIOL 473</td>
<td>Laboratory in Mammalian Physiology</td>
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<tr>
<td>BIOL 475N</td>
<td>Anatomy in Italy: Cadavers, Culture, and Science</td>
<td></td>
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<tr>
<td>BIOL 478</td>
<td>COMPARATIVE NEUROANATOMY</td>
<td></td>
</tr>
<tr>
<td>BIOL 482</td>
<td>Coastal Biology</td>
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</tr>
<tr>
<td>BIOL 494</td>
<td>Research Project</td>
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<tr>
<td>BIOL 495</td>
<td>Internship in Biology</td>
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</tr>
<tr>
<td>BIOL 496</td>
<td>Independent Studies</td>
<td></td>
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<tr>
<td>BIOL 499A</td>
<td>Tropical Field Ecology</td>
<td></td>
</tr>
<tr>
<td>BIOTC 459</td>
<td>Plant Tissue Culture and Biotechnology</td>
<td></td>
</tr>
<tr>
<td>SC 295</td>
<td>Science Co-op Work Experience I</td>
<td></td>
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<tr>
<td>SC 395</td>
<td>Science Co-op Work Experience II</td>
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<tr>
<td>SC 495</td>
<td>Science Co-op Work Experience III</td>
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<tr>
<td>CHEM 210</td>
<td>Organic Chemistry I</td>
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<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>
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</tr>
</tbody>
</table>

**Groups**

Select a minimum of 18 credits of 400-level biology courses, with at least 3 credits from each of the following groups (each course may be used to satisfy a requirement in only one group). Moreover, a maximum of 3 credits of BIOL 400, 494, 495, 496 and SC 295, 395, 495 may be used to fulfill the 18 credit minimum in the 400-level biology course requirements.

**Plant and Fungi Group:**
- BIOL 406 Symbiosis
- BIOL 407 Plant Developmental Anatomy
- BIOL 414 Taxonomy of Seed Plants
- BIOL 420 Paleobotany
- BIOL 424 Seeds of Change: The Uses of Plants
- BIOL/PPEM 425 Biology of Fungi

**Evolution Group:**
- BIOL 431 Reproductive Biology
- BIOL 441 Plant Physiology
- BIOL 444 Field Ecology
- BIOL 446 Physiological Ecology
- BIOL 448 Ecology of Plant Reproduction
- BIOL 451 Biology of RNA
- BIOL 482 Coastal Biology
- BIOL 499A Tropical Field Ecology
- PPEM 427 Mycotoxins: Effects of Fungal Toxins on Human and Animal Health

**Supporting Courses and Related Areas**

Select 17-24 credits from department list

**General Biology Option (46-51 credits)**

*Available at the following campuses: Abington, Altoona, Beaver, Berks, Brandywine, Harrisburg, Schuylkill, Scranton, University Park, York*

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>BIOL 401</td>
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<td>SC 395</td>
<td>Science Co-op Work Experience II</td>
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</tr>
<tr>
<td>SC 495</td>
<td>Science Co-op Work Experience III</td>
<td></td>
</tr>
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</table>

**Additional Courses**

Select one of the following: 6-8

- CHEM 202 Fundamentals of Organic Chemistry I
- & CHEM 203 and Fundamentals of Organic Chemistry II
- BIOL 406 Symbiosis
- BIOL 407 Plant Developmental Anatomy
- BIOL 414 Taxonomy of Seed Plants
- BIOL 420 Paleobotany
- BIOL 424 Seeds of Change: The Uses of Plants
- BIOL/PPEM 425 Biology of Fungi
- BIOL 431 Reproductive Biology
- BIOL 441 Plant Physiology
- BIOL 444 Field Ecology
- BIOL 446 Physiological Ecology
- BIOL 448 Ecology of Plant Reproduction
- BIOL 451 Biology of RNA
- BIOL 482 Coastal Biology
- BIOL 499A Tropical Field Ecology
- PPEM 427 Mycotoxins: Effects of Fungal Toxins on Human and Animal Health
- BIOL 405 Molecular Evolution
- BIOL 406 Symbiosis
- BIOL 411 Medical Embryology
- BIOL 414 Taxonomy of Seed Plants
- BIOL 417 Invertebrate Zoology
- BIOL 420 Paleobotany
- BIOL 421 Comparative Anatomy of Vertebrates
- BIOL 422 Advanced Genetics
- BIOL/PPEM 425 Biology of Fungi
- BIOL 427 Evolution
- BIOL 428 Population Genetics
- BIOL 429 Animal Behavior
- BIOL 432 Developmental Genetics
- BIOL 433 Evolution of Vertebrates
- BIOL 434 Pathobiology of Emerging Infectious Disease
- BIOL 436 Population Ecology and Global Climate Change
- BIOL 438 Theoretical Population Ecology
- BIOL 439 Practical Bioinformatics
- BIOL 443 Evo-devo: Evolution of Developmental Mechanisms
- BIOL 446 Physiological Ecology
- BIOL 451 Biology of RNA
- BIOL 460 Human Genetics
- BIOL 463 General Ecology
- BIOL 464 Sociobiology
Biology, B.S. (Altoona)

Genetics and Developmental Biology Group:
- BIOL 474  Astrobiology
- BIOL 478  COMPARATIVE NEUROANATOMY

Practicum Group:
- BIOL 474  Astrobiology
- BIOL 478  COMPARATIVE NEUROANATOMY

Ecology Group:
- BIOL 404  Cellular Mechanisms in Vertebrate Physiology
- BIOL 406  Symbiosis
- BIOL 407  Plant Developmental Anatomy
- BIOL 411  Medical Embryology
- BIOL 413  Cell Signaling and Regulation
- BIOL 416  Biology of Cancer
- BIOL 422  Advanced Genetics
- BIOL 426  Developmental Neurobiology
- BIOL 428  Population Genetics
- BIOL 430  Developmental Biology
- BIOL 431  Reproductive Biology
- BIOL 432  Developmental Genetics
- BIOL 439  Practical Bioinformatics
- BIOL 443  Evo-devo: Evolution of Developmental Mechanisms
- BIOL 448  Ecology of Plant Reproduction
- BIOL 451  Biology of RNA
- BIOL 460  Human Genetics
- BIOL 467  Molecular Basis of Neurological Diseases
- BIOL 469  Neurobiology
- MICRB 410  Principles of Immunology
- BIOL 414  Taxonomy of Seed Plants
- BIOL 417  Invertebrate Zoology
- BIOL 419  Ecological and Environmental Problem Solving
- BIOL/PPEM 425  Biology of Fungi
- BIOL 421  Comparative Anatomy of Vertebrates
- BIOL 422  Advanced Genetics
- BIOL 424  Seeds of Change: The Uses of Plants
- BIOL 426  Developmental Neurobiology
- BIOL 430  Developmental Biology
- BIOL 431  Reproductive Biology
- BIOL 432  Developmental Genetics
- BIOL 437  Histology
- BIOL 443  Evo-devo: Evolution of Developmental Mechanisms
- BIOL 446  Physiological Ecology
- BIOL 460  Human Genetics
- BIOL 466  Neurobiology
- BIOL 470  Functional and Integrative Neuroscience
- BIOL 472  Mammalian Physiology
- BIOL 478  COMPARATIVE NEUROANATOMY
- BIOL 479  General Endocrinology
- BIOL 482  Coastal Biology
- BIOL 400  Teaching in Biology
- BIOL 402W  Biological Experimental Design
- BIOL 407  Plant Developmental Anatomy
- BIOL 414  Taxonomy of Seed Plants
- BIOL 417  Invertebrate Zoology
- BIOL 419  Ecological and Environmental Problem Solving
- BIOL 421  Comparative Anatomy of Vertebrates
- BIOL 422  Advanced Genetics
- BIOL/PPEM 425  Biology of Fungi
- BIOL 433  Evolution of Vertebrates
- BIOL 437  Histology
- BIOL 439  Practical Bioinformatics
- BIOL 444  Field Ecology
- BIOL 450W  Experimental Field Biology
- BIOL 461  Contemporary Issues in Science and Medicine
- BIOL 473  Laboratory in Mammalian Physiology
- BIOL 475N  Anatomy in Italy: Cadavers, Culture, and Science
- BIOL 476  Advanced Human Anatomy - cadaver based
- BIOL 478  COMPARATIVE NEUROANATOMY
- BIOL 482  Coastal Biology
- BIOL 494  Research Project
- BIOL 495  Internship in Biology
- BIOL 496  Independent Studies
- BIOL 499A  Tropical Field Ecology
- BIOLTC 459  Plant Tissue Culture and Biotechnology
- SC 295  Science Co-op Work Experience I
- SC 395  Science Co-op Work Experience II
- SC 495  Science Co-op Work Experience III

Supporting Courses and Related Areas
Select 20-27 credits from department list 20-27

Genetics and Developmental Biology Option (46-51 credits)
Available at the following campuses: Abington, Berks, Harrisburg, University Park, York
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### Additional Courses

Select 2-5 credits from the following:  

- MATH 220 Matrices  
- MATH 231 Calculus of Several Variables  
- MICRB 201 Introductory Microbiology  
- MICRB 202 Introductory Microbiology Laboratory

### Groups

#### Genetics and Developmental Biology Group:

- BIOL 404 Cellular Mechanisms in Vertebrate Physiology  
- BIOL 405 Molecular Evolution  
- BIOL 407 Plant Developmental Anatomy  
- BIOL 411 Medical Embryology  
- BIOL 413 Cell Signaling and Regulation  
- BIOL 416 Biology of Cancer  
- BIOL 422 Advanced Genetics  
- BIOL 426 Developmental Neurobiology  
- BIOL 428 Population Genetics  
- BIOL 431 Reproductive Biology  
- BIOL 432 Developmental Genetics  
- BIOL 439 Practical Bioinformatics  
- BIOL 443 Evo-devo: Evolution of Developmental Mechanisms  
- BIOL 448 Ecology of Plant Reproduction  
- BIOL 451 Biology of RNA  
- BIOL 460 Human Genetics  
- BIOL 467 Molecular Basis of Neurological Diseases  
- BIOL 469 Neurobiology  
- BMB 400 Molecular Biology of the Gene or BMB 450 Microbial/Molecular Genetics or BMB 464 Molecular Medicine or BMB 484 Functional Genomics or HORT 407 Plant Breeding or MICRB 41 Principles of Immunology

#### Evolution Group:

- BIOL 405 Molecular Evolution  
- BIOL 406 Symbiosis  
- BIOL 411 Medical Embryology  
- BIOL 414 Taxonomy of Seed Plants  
- BIOL 417 Invertebrate Zoology

### Supporting Courses and Related Areas

Select 9-17 credits from department list

- BIOL 420 Paleobotany  
- BIOL 421 Comparative Anatomy of Vertebrates  
- BIOL 422 Advanced Genetics  
- BIOL/PPEM 425 Biology of Fungi  
- BIOL 427 Evolution  
- BIOL 428 Population Genetics  
- BIOL 429 Animal Behavior  
- BIOL 432 Developmental Genetics  
- BIOL 433 Evolution of Vertebrates  
- BIOL 434 Pathobiology of Emerging Infectious Disease  
- BIOL 436 Population Ecology and Global Climate Change  
- BIOL 438 Theoretical Population Ecology  
- BIOL 439 Practical Bioinformatics  
- BIOL 443 Evo-devo: Evolution of Developmental Mechanisms  
- BIOL 446 Physiological Ecology  
- BIOL 451 Biology of RNA  
- BIOL 460 Human Genetics  
- BIOL 463 General Ecology  
- BIOL 464 Sociobiology  
- BIOL 474 Astrobiology  
- BIOL 478 COMPARATIVE NEUROANATOMY

### Practicum Group:

- BIOL 400 Teaching in Biology  
- BIOL 402W Biological Experimental Design  
- BIOL 407 Plant Developmental Anatomy  
- BIOL 414 Taxonomy of Seed Plants  
- BIOL 417 Invertebrate Zoology  
- BIOL 419 Ecological and Environmental Problem Solving  
- BIOL 421 Comparative Anatomy of Vertebrates  
- BIOL 422 Advanced Genetics  
- BIOL/PPEM 425 Biology of Fungi  
- BIOL 433 Evolution of Vertebrates  
- BIOL 437 Histology  
- BIOL 439 Practical Bioinformatics  
- BIOL 444 Field Ecology  
- BIOL 450W Experimental Field Biology  
- BIOL 461 Contemporary Issues in Science and Medicine  
- BIOL 473 Laboratory in Mammalian Physiology  
- BIOL 475N Anatomy in Italy: Cadavers, Culture, and Science  
- BIOL 478 COMPARATIVE NEUROANATOMY  
- BIOL 482 Coastal Biology  
- BIOL 494 Research Project  
- BIOL 495 Internship in Biology  
- BIOL 496 Independent Studies  
- BIOL 499A Tropical Field Ecology  
- SC 295 Science Co-op Work Experience I  
- SC 395 Science Co-op Work Experience II  
- SC 495 Science Co-op Work Experience III

### Supporting Courses and Related Areas

Select 9-17 credits from department list
Neuroscience Option (46-51 credits)
Available at the following campuses: University Park

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<td>CHEM 213</td>
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Additional Courses
Select 3 credits from the following:
- BIOL 426 Developmental Neurobiology
- BIOL 470 Functional and Integrative Neuroscience
- BIOL 478 COMPARATIVE NEUROANATOMY

Groups
Select a minimum of 12 credits of 400-level biology courses, with at least 6 credits from the Neuroscience group, 3 credits from the Evolution group, and 3 credits from the Practicum Group. A maximum of 3 credits of BIOL 400, 494, 495, 496 and SC 295, 395, 495 may be used to fulfill the 12 credit minimum in the 400-level biology course requirements.

Neuroscience Group:
- BIOL 404 Cellular Mechanisms in Vertebrate Physiology
- BIOL 413 Cell Signaling and Regulation
- BIOL 424 Seeds of Change: The Uses of Plants
- BIOL 426 Developmental Neurobiology
- BIOL 430 Developmental Biology
- BIOL 437 Histology
- BIOL 467 Molecular Basis of Neurological Diseases
- BIOL 470 Functional and Integrative Neuroscience
- BIOL 472 Mammalian Physiology
- BIOL 473 Laboratory in Mammalian Physiology
- BIOL 478 COMPARATIVE NEUROANATOMY
- BIOL 479 General Endocrinology
- BBH 432 Biobehavioral Aspects of Stress
  - or BBH 451 Pharmacological Influences on Health
  - or BBH 468 Neuroanatomical Bases for Disorders of Behavior and Health
  - or HDFS 468 Biological Bases of Behavioral Development
  - or NUTR 445 Energy and Macronutrient Metabolism
  - or PSYCH 45 Learning and Memory
  - or PSYCH 46 Physiological Psychology
  - or PSYCH 47 Clinical Neuropsychology

Evolution Group:
- BIOL 405 Molecular Evolution
- BIOL 406 Symbiosis
- BIOL 411 Medical Embryology
- BIOL 414 Taxonomy of Seed Plants
- BIOL 417 Invertebrate Zoology
- BIOL 420 Paleobotany
- BIOL 421 Comparative Anatomy of Vertebrates
- BIOL 422 Advanced Genetics

Practicum Group:
- BIOL 400 Teaching in Biology
- BIOL 402W Biological Experimental Design
- BIOL 407 Plant Developmental Anatomy
- BIOL 414 Taxonomy of Seed Plants
- BIOL 417 Invertebrate Zoology
- BIOL 419 Ecological and Environmental Problem Solving
- BIOL 421 Comparative Anatomy of Vertebrates
- BIOL 422 Advanced Genetics
- BIOL/PPEM 425 Biology of Fungi
- BIOL 433 Evolution of Vertebrates
- BIOL 437 Histology
- BIOL 439 Practical Bioinformatics
- BIOL 444 Field Ecology
- BIOL 450W Experimental Field Biology
- BIOL 461 Contemporary Issues in Science and Medicine
- BIOL 473 Laboratory in Mammalian Physiology
- BIOL 475N Anatomy in Italy: Cadavers, Culture, and Science
- BIOL 478 COMPARATIVE NEUROANATOMY
- BIOL 482 Coastal Biology
- BIOL 494 Research Project
- BIOL 495 Internship in Biology
- BIOL 496 Independent Studies
- BIOL 499A Tropical Field Ecology
- BIOTC 459 Plant Tissue Culture and Biotechnology
- SC 295 Science Co-op Work Experience I
- SC 395 Science Co-op Work Experience II
- SC 495 Science Co-op Work Experience III

Supporting Courses and Related Areas
Select 14-19 credits from department list

Plant Biology Option (46-51 credits)
Available at the following campuses: University Park
### Prescribed Courses

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<td>BIOL 441</td>
<td>Plant Physiology</td>
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<td>CHEM 213</td>
<td>Laboratory in Organic Chemistry</td>
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</table>

### Additional Courses

**Groups**

- Select a minimum of 12 credits of 400-level biology courses, with at least 6 credits from the Plant and Fungi group, 3 credits from the Evolution group, and 3 credits from the Practicum group. A maximum of 3 credits of BIOL 400, 494, 495, 496 and SC 295, 395, 495 may be used to fulfill the 12 credit minimum in the 400-level biology course requirements.

**Plant and Fungi Group:**
- BIOL 406 Symbiosis
- BIOL 414 Taxonomy of Seed Plants
- BIOL 420 Paleobotany
- BIOL 424 Seeds of Change: The Uses of Plants
- BIOL/PPEM 425 Biology of Fungi

**Evolution Group:**
- BIOL 431 Reproductive Biology
- BIOL 444 Field Ecology
- BIOL 446 Physiological Ecology
- BIOL 448 Ecology of Plant Reproduction
- BIOL 451 Biology of RNA
- BIOL 482 Coastal Biology
- BIOL 499A Tropical Field Ecology
- BIOL 405 Molecular Evolution
- BIOL 406 Symbiosis
- BIOL 411 Medical Embryology
- BIOL 414 Taxonomy of Seed Plants
- BIOL 417 Invertebrate Zoology
- BIOL 420 Paleobotany
- BIOL 421 Comparative Anatomy of Vertebrates
- BIOL 422 Advanced Genetics
- BIOL/PPEM 425 Biology of Fungi

**Practicum Group:**
- BIOL 400 Teaching in Biology
- BIOL 402W Biological Experimental Design
- BIOL 407 Plant Developmental Anatomy
- BIOL 414 Taxonomy of Seed Plants
- BIOL 417 Invertebrate Zoology
- BIOL 419 Ecological and Environmental Problem Solving
- BIOL 421 Comparative Anatomy of Vertebrates
- BIOL 422 Advanced Genetics
- BIOL/PPEM 425 Biology of Fungi

**Supporting Courses and Related Areas**

Select 14-19 credits from department list

### Vertebrate Physiology Option (46-51 credits)

*Available at the following campuses: Abington, Altoona, Brandywine, University Park*

<table>
<thead>
<tr>
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<td>Laboratory in Mammalian Physiology</td>
<td>2</td>
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<tr>
<td>BMB 401</td>
<td>General Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>BMB 402</td>
<td>General Biochemistry</td>
<td>3</td>
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<tr>
<td>CHEM 210</td>
<td>Organic Chemistry I</td>
<td>3</td>
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</tr>
<tr>
<td>CHEM 213</td>
<td>Laboratory in Organic Chemistry</td>
<td>2</td>
</tr>
</tbody>
</table>

### Additional Courses

**Groups**
Select a minimum of 12 credits of 400-level courses, with at least 12 credits from the Physiology group, 3 credits from the Evolution group, and 3 credits from the Practicum group. A maximum of 3 credits of BIOL 400, 494, 495, 496 and SC 295, 395, 495 may be used to fulfill the 12 credit minimum in the 400-level biology course requirements.

**Physiology Group:**
- BIOL 404: Cellular Mechanisms in Vertebrate Physiology
- BIOL 406: Symbiosis
- BIOL 409: Biology of Aging
- BIOL 411: Medical Embryology
- BIOL 412: Ecology of Infectious Diseases
- BIOL 413: Cell Signaling and Regulation
- BIOL 415: Ecotoxicology
- BIOL 416: Biology of Cancer
- BIOL 421: Comparative Anatomy of Vertebrates
- BIOL 424: Seeds of Change: The Uses of Plants
- BIOL 426: Developmental Neurobiology
- BIOL 430: Developmental Biology
- BIOL 431: Reproductive Biology
- BIOL 432: Developmental Genetics
- BIOL 437: Histology
- BIOL 443: Evo-devo: Evolution of Developmental Mechanisms
- BIOL 446: Physiological Ecology
- BIOL 460: Human Genetics
- BIOL 469: Neurobiology
- BIOL 470: Functional and Integrative Neuroscience
- BIOL 478: COMPARATIVE NEUROANATOMY
- BIOL 479: General Endocrinology
- BIOL 482: Coastal Biology
- ANSC 431: Physiology of Animal Reproduction
  - or ANTH 466: The Skull
  - or BMB 484: Functional Genomics
  - or ENT 402: Biology of Animal Parasites
  - or MICRB 40: Microbial Physiology and Structure
  - or MICRB 41: Principles of Immunology
  - or MICRB 41: Medical Microbiology
  - or MICRB 43: Viral Pathogenesis
  - or PSYCH 46: Physiological Psychology

**Evolution Group:**
- BIOL 405: Molecular Evolution
- BIOL 406: Symbiosis
- BIOL 411: Medical Embryology
- BIOL 414: Taxonomy of Seed Plants
- BIOL 417: Invertebrate Zoology
- BIOL 420: Paleobotany
- BIOL 421: Comparative Anatomy of Vertebrates
- BIOL 422: Advanced Genetics
- BIOL/PPEM 425: Biology of Fungi
- BIOL 427: Evolution
- BIOL 428: Population Genetics
- BIOL 429: Animal Behavior
- BIOL 432: Developmental Genetics
- BIOL 433: Evolution of Vertebrates
- BIOL 434: Pathobiology of Emerging Infectious Disease
- BIOL 436: Population Ecology and Global Climate Change
- BIOL 438: Theoretical Population Ecology
- BIOL 439: Practical Bioinformatics
- BIOL 443: Evo-devo: Evolution of Developmental Mechanisms
- BIOL 446: Physiological Ecology
- BIOL 451: Biology of RNA
- BIOL 460: Human Genetics
- BIOL 463: General Ecology
- BIOL 464: Sociobiology
- BIOL 474: Astrobiology
- BIOL 478: COMPARATIVE NEUROANATOMY

**Practicum Group:**
- BIOL 400: Teaching in Biology
- BIOL 402W: Biological Experimental Design
- BIOL 407: Plant Developmental Anatomy
- BIOL 414: Taxonomy of Seed Plants
- BIOL 417: Invertebrate Zoology
- BIOL 419: Ecological and Environmental Problem Solving
- BIOL 421: Comparative Anatomy of Vertebrates
- BIOL 422: Advanced Genetics
- BIOL/PPEM 425: Biology of Fungi
- BIOL 433: Evolution of Vertebrates
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- BIOTC 459: Plant Tissue Culture and Biotechnology
- SC 295: Science Co-op Work Experience I
- SC 395: Science Co-op Work Experience II
- SC 495: Science Co-op Work Experience III

**Supporting Courses and Related Areas**
Select 15-20 credits from department list

**Program Learning Objectives**
1. Students should be able to explain the process of evolution and its underlying mechanisms;
2. Students should be able to explain the following core concepts, as discussed in Vision and Change: A Call to Action 2010 Report (American Association for the Advancement of Science):
a. Structure and function (the basic units of biological structure that define the functions of living things)
b. Information flow, exchange and storage (the influence of genetics on the growth and behavior of organisms)
c. Pathways and transformations of energy and matter (the ways in which chemical transformation pathways and the laws of thermodynamics govern the growth and change of biological systems)
d. Systems (the ways in which living things are interconnected and interact with one another)
e. Biodiversity at the genetic, organismal, community, and global scales

3. Students should be able to read and critically interpret primary scientific literature.

4. Students should be able to communicate results of biological research. Students should be able to: write reviews of scientific literature; write formal laboratory reports and/or research manuscripts; and give scientific presentations (talks, poster presentations, etc.).

5. Students should be able to recognize and apply ethical principles to basic and applied practice, and recognize the roles of science and scientists in society.

6. Students should be able to demonstrate appropriate laboratory skills, including: scientific technique; maintenance of a laboratory notebook; writing laboratory reports; and adhering to all laboratory safety procedures.

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

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York

Anne Vardo-Zalik
Associate Professor of Biology
### Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2019-20 academic year. To access previous years' suggested academic plans, please visit the archive (http://bulletins.psu.edu/undergraduate/archive) to view the appropriate Undergraduate Bulletin edition (Note: the archive only contain suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin).

### General Biology Option at Altoona 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

<table>
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<th>Course</th>
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#### Third Year

<table>
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<tr>
<th>Term</th>
<th>Course</th>
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<th>Spring</th>
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<tbody>
<tr>
<td>Fall</td>
<td>Biology 400-level Selection (consult with an academic adviser for options)</td>
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<td></td>
<td>CHEM 213 (Elective - Supporting Course)</td>
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<td>PHYS 251 or 212&lt;sup&gt;†&lt;/sup&gt;</td>
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<td>PHYS 213 and PHYS 214 or Elective - Supporting Course</td>
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#### Fourth Year

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<td>Biology 400-level Selection (consult with an academic adviser for options)</td>
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<td>Biology 400-level Selection (consult with an academic adviser for options)</td>
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<td>Biology 400-level Selection (consult with an academic adviser for options)</td>
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<td>ENGL 202C</td>
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<td>3 or 4</td>
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</tbody>
</table>

Total Credits 123-127

* Course requires a grade of C or better for the major
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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.

### Vertebrate Physiology Option at Altoona 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

<table>
<thead>
<tr>
<th>Term</th>
<th>Course</th>
<th>Credits</th>
<th>Spring</th>
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<tbody>
<tr>
<td>Fall</td>
<td>BIOL 110&lt;sup&gt;*&lt;/sup&gt;</td>
<td>4</td>
<td>BIOL 220W or 240W&lt;sup&gt;*&lt;/sup&gt;</td>
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<tr>
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<td>CHEM 110&lt;sup&gt;##&lt;/sup&gt;</td>
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<td>CHEM 112&lt;sup&gt;##&lt;/sup&gt;</td>
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<td>CHEM 111&lt;sup&gt;†&lt;/sup&gt;</td>
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<td>CHEM 113&lt;sup&gt;‡&lt;/sup&gt;</td>
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<td>MATH 140B or 140&lt;sup&gt;##&lt;/sup&gt;</td>
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<td>MATH 141</td>
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<td>General Education Course</td>
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<td>ENGL 15, 30, or ESL 15&lt;sup&gt;‡&lt;/sup&gt;</td>
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<table>
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<tr>
<th>Term</th>
<th>Course</th>
<th>Credits</th>
<th>Spring</th>
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<tbody>
<tr>
<td>Fall</td>
<td>Biology 400-level Selection (consult with an academic adviser for options)</td>
<td>3</td>
<td>Biology 400-level Selection (consult with an academic adviser for options)</td>
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<td>CHEM 112&lt;sup&gt;##&lt;/sup&gt;</td>
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<td>CHEM 111&lt;sup&gt;†&lt;/sup&gt;</td>
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<td>CHEM 113&lt;sup&gt;‡&lt;/sup&gt;</td>
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<td>MATH 140B or 140&lt;sup&gt;##&lt;/sup&gt;</td>
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</table>

Total Credits 123-127

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1 Elias Science Building
York, PA 17403
717-718-6705
amv12@psu.edu

What If
Academic Requirements

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

<table>
<thead>
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<th>Fall</th>
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<th>Spring</th>
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<tr>
<td>BIOL 110*†</td>
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<td>BIOL 220W or 240W*</td>
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<td>CHEM 110*‡</td>
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<td>CHEM 112*†</td>
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<td>CHEM 111†</td>
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<td>MATH 140B or 140*‡†</td>
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<td>ENGL 15, 30, or ESL 15†</td>
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### Second Year

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<tr>
<td>BIOL 230W*</td>
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<td>BIOL 220W or 240W*</td>
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<td>CHEM 210</td>
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<td>CHEM 212</td>
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<td>STAT 200 or 250</td>
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<td>PHYS 251</td>
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<td>CAS 100†</td>
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15

### Third Year

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<th>Spring</th>
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<td>BIOL 472 (Biology 400-level Course)</td>
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<td>BOL 473</td>
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<td>PHYS 251 or 212</td>
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<td>Biology 400-level Selection (consult with an academic adviser for options) or PHYS 213 and PHYS 214</td>
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<td>General Education Course</td>
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<tr>
<td>Elective Course - Supporting Course</td>
<td>3</td>
<td>Elective Course - Supporting Course</td>
<td>3</td>
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</tbody>
</table>
| General Education Course (GHW) | 1.5 &nbsp;&n...
Biology, B.S. (Altoona)

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<tr>
<td>ENGL 202C</td>
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<td>† Course requires a grade of C or better for General Education</td>
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<td>STAT 462 or 464</td>
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<td>3 or 4</td>
<td>† Course satisfies General Education and degree requirement</td>
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Career Paths

A Biology BS degree provides an excellent foundation and the skills required for a wide range of technical careers. While many majors use a Biology degree to prepare for entrance into health professional schools, others follow career paths in research, education, and business. Students also pursue graduate study at universities both across the U.S. and internationally.

MORE INFORMATION ABOUT POTENTIAL CAREER OPTIONS FOR GRADUATES OF THE BIOLOGY PROGRAM (http://bio.psu.edu/undergraduate-portal/after-graduation)

MORE INFORMATION ABOUT OPPORTUNITIES FOR GRADUATE STUDIES (http://bio.psu.edu/graduate-portal)

Contact

Altoona
DIVISION OF MATHEMATICS AND NATURAL SCIENCES
Hawthorn Building 109
3000 Ivyside Park
Altoona, PA 16601
814-949-5205
lpk3@psu.edu

http://altoona.psu.edu/academics/bachelors-degrees/biology/request-information

Abington
DIVISION OF SCIENCE AND ENGINEERING
1600 Woodland Road

Total Credits 122-127

Abington, PA 19001
215-881-7300
epi1@psu.edu

http://abington.psu.edu/biology

Beaver
100 University Drive
Monaca, PA 15061
724-773-3527
cmm48@psu.edu

http://beaver.psu.edu/biology

Berks
DIVISION OF SCIENCE
Luerssen Science Building
Reading, PA 19610
610-396-6328
med18@psu.edu

http://berks.psu.edu/bs-biology

Brandywine
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25 Yearsley Mill Rd
Media, PA 19063
610-285-1268
mab90@psu.edu

https://brandywine.psu.edu/academics/bachelors-degrees/biology

Harrisburg
SCHOOL OF SCIENCE, ENGINEERING, AND TECHNOLOGY
Science & Tech Building, TL 177
Middletown, PA 17057
717-948-4387
mrr53@psu.edu

https://harrisburg.psu.edu/science-engineering-technology/biology-science/bachelor-science-biology

Schuylkill
ACADEMIC AFFAIRS
C-001 200 University Drive
Schuylkill Haven, PA 17972
570-385-6167
ljr5322@psu.edu

https://schuylkill.psu.edu/academics/degrees/bacc-degrees/biology

Scranton
BIOLOGY
Dawson 207
Dunmore, PA 18512
570-963-2579
dxb14@psu.edu

https://scranton.psu.edu/biology-degree

University Park
DEPARTMENT OF BIOLOGY
228 Ritenour Building
University Park, PA 16802  
814-865-2329  
psubioadvising@psu.edu  

http://bio.psu.edu/about-us/contact-us

York  
1 Elias Science Building  
York, PA 17403  
717-718-6705  
amv12@psu.edu  

http://york.psu.edu/academics/baccalaureate/biology