INTEGRATIVE SCIENCE, B.S. (BERKS)

Begin Campus: Any Penn State Campus

End Campus: Berks

Program Description

The Integrative 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 across disciplinary areas, and who seek a high degree of flexibility to obtain their educational objectives. After completing foundation courses in biology, calculus, chemistry, physics, and statistics, students select additional science courses from designated areas to customize the curriculum to their own interests. A large number of supporting credits enable students to incorporate significant breadth or specialization into their academic training, such as through courses in business, computer and information science, health science, social science, and other fields.

This major helps prepare students for careers in many different job sectors including agriculture, biotechnology, chemistry, education, government, industry, medicine, pharmaceutical, research & development, sustainability, and more. Graduates of this major pursue diverse career paths and hold a variety of roles such as research scientist, data analyst, technician, program coordinator, project manager, consultant, and laboratory associate. The degree can also be tailored to meet specific requirements of professional programs such as medical, dental, physician assistant, pharmacy, or law school, as well as graduate school.

General Science Option

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

The General Science option of the B.S. Integrative 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: Abington, Berks, Harrisburg, Scranton, York

Mathematical Sciences Option

Available at the following campuses: Abington

Secondary Education Option

Available at the following campuses: Harrisburg

Not all of these options are available at all locations. See the Science program director at your College for details regarding program curriculum at your location.

What is Integrative Science?

The Integrative Science major provides a broad and interdisciplinary foundation in the natural sciences. The Integrative 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 Integrative 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.

Entrance to the Integrative Science Secondary Education option requires the following additional requirements:

1. completed at least one of the following courses, BIOL 220W or BIOL 230W or BIOL 240W; PHYS 250, with a grade of C or better;
2. attained at least a 3.00 cumulative grade-point average;
3. completed ENGL 15 or ENGL 30H;
4. completed 3 credits of literature from a department-approved list with a grade of C or better;
5. completed 6 credits of college-level mathematics (GQ MATH or STAT prefixes) with a grade of C or better;
6. satisfy any entrance testing requirements set out by the Pennsylvania Department of Education in effect at the time of application for the major;
7. submission to the Teacher Education Office of current and clear background checks as required by the Pennsylvania Department of Education;
8. submission of documentation of 20 pre-major fieldwork hours.

Degree Requirements

For the Bachelor of Science degree in Integrative Science with an option in General Science; Biological Sciences and Health Professions; Legal Studies, Government Service, Public Policy; Life Science; and Mathematical Science, a minimum of 120 credits is required, with at least 15 credits at the 400 level. For the Bachelor of Science degree in Integrative Science with an option in Secondary Education, a minimum of 125 credits is required, with at least 15 credits at the 400 level.

Requirement	Credits
General Education	45
Requirements for the Major	90-110

13-30 of the 45 credits for General Education are included in the Requirements for the Major. For the General Science Option; Biological Sciences and Health Professions Option; Legal Studies, Government Service, Public Policy Option; Life Science Option this includes: 9 credits of GN courses and 4-6 credits of GQ courses. For the Mathematical Science Option this includes: 9 credits of GN courses and 6 credits of GQ courses. For the Secondary Education Option this includes: 9 credits of GN courses; 6 credits of GQ courses; 3 credits of GWS courses (ENGL 202C); 3 credits of GH courses (literature department list); 6 credits of GS courses (EDPSY 14 and HDFS 239); 3 credits of Integrative Studies courses (EDUC 466N).

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)

Code	Title	Credits
Prescribed Courses		
CHEM 111	Experimental Chemistry I	1
CHEM 112	Chemical Principles II	3
CHEM 113	Experimental Chemistry II	1
Prescribed Courses: Require a grade of C or better		
BIOL 110	Biology: Basic Concepts and Biodiversity	4
CHEM 110	Chemical Principles I	3
MATH 140	Calculus With Analytic Geometry I	4
Requirements for the Option		
Select an option		74-94

Requirements for the Option

General Science Option (74 credits)

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

Code	Title	Credits
Additional Courses		
STAT 200	Elementary Statistics	3-4
or STAT 250	Introduction to Biostatistics	
Select 4 credits from the following:		4
BIOL 161 & BIOL 162	Human Anatomy and Physiology I - Lecture and Human Anatomy and Physiology I - Laboratory	
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:		8-12
PHYS 211 & PHYS 212 & PHYS 213 & PHYS 214	General Physics: Mechanics and General Physics: Electricity and Magnetism and General Physics: Fluids and Thermal Physics and General Physics: Wave Motion and Quantum Physics [1]	
PHYS 250 & PHYS 251	Introductory Physics I and Introductory Physics II [1]	
Supporting Courses and Related Areas		
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 3 credits in Integrative and Applied Sciences from department approved course list in consultation with adviser		3
Select 6 credits of 400-level courses		6
Select 21-26 credits from program list [2,3]		21-26
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 [4,5]		18

1. PHYS 211 and PHYS 250 require a grade of C or better.
2. A maximum of 12 credits of Independent Study (296, 496) may be applied toward credits for graduation.
3. Students may apply ROTC credits toward the Program List.
4. Only the 9 credits at the 400 level require a grade of C or better.
5. Life sciences include BIOL, BIOTC, BMB, FRNSC, MICRB. Mathematical sciences include CMPSC, DS, MATH, STAT. Physical sciences include ASTRO, CHEM, PHYS.

Biological Sciences and Health Professions Option (74 credits)

Available at the following campuses: University Park

Code	Title	Credits
Prescribed Courses		
HPA 101	Introduction to Health Services Organization	3
Additional Courses		
STAT 200	Elementary Statistics	3-4
or STAT 250	Introduction to Biostatistics	
Select 4 credits from the following:		4
BIOL 161 & BIOL 162	Human Anatomy and Physiology I - Lecture and Human Anatomy and Physiology I - Laboratory	
BIOL 220W	Biology: Populations and Communities	
BIOL 230W	Biology: Molecules and Cells	
BIOL 240W	Biology: Function and Development of Organisms	
Select 3-4 credits from the following:		3-4
BIOL 222	Genetics	
BIOL 230W	Biology: Molecules and Cells	
BIOL 322	Genetic Analysis	
BMB 211	Elementary Biochemistry	
BMB/MICRB 251	Molecular and Cell Biology I	
MICRB 201	Introductory Microbiology	
Select 6-8 credits from the following:		6-8
CHEM 202 & CHEM 203	Fundamentals of Organic Chemistry I and Fundamentals of Organic Chemistry II	
CHEM 210 & CHEM 212 & CHEM 213W	Organic Chemistry I and Organic Chemistry II and Laboratory in Organic Chemistry - Writing Intensive	
Select 8-12 credits from the following:		8-12

PHYS 211	General Physics: Mechanics	
& PHYS 212	and General Physics: Electricity and Magnetism	
& PHYS 213	and General Physics: Fluids and Thermal Physics	
& PHYS 214	and General Physics: Wave Motion and Quantum Physics [1]	
PHYS 250	Introductory Physics I	
& PHYS 251	and Introductory Physics II [1]	
Supporting Courses and Related Areas		
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 15 credits in Healthcare/Medicine/Ethical Competencies from department approved course list in consultation with adviser [2]		15
Select 9-17 credits from program list [3,4]		9-17
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. 6 credits must be at the 400-level.
3. A maximum of 12 credits of Independent Studies (296, 496) may be applied toward credits for graduation.
4. Students may apply ROTC credits toward the Program List.

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

Available at the following campuses: University Park

Code	Title	Credits
Additional Courses		
STAT 200	Elementary Statistics	3-4
or STAT 250	Introduction to Biostatistics	
Select 4 credits from the following:		4
BIOL 161	Human Anatomy and Physiology I - Lecture	
& BIOL 162	and Human Anatomy and Physiology I - Laboratory	
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:		8-12
PHYS 211	General Physics: Mechanics	
& PHYS 212	and General Physics: Electricity and Magnetism	
& PHYS 213	and General Physics: Fluids and Thermal Physics	
& PHYS 214	and General Physics: Wave Motion and Quantum Physics [1]	
PHYS 250	Introductory Physics I	
& PHYS 251	and Introductory Physics II [1]	
Supporting Courses and Related Areas		
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 18 credits in Legal Studies, Government Service, Public Policy from department approved course list in consultation with adviser [2]		18
Select 12-17 credits from program list [3,4]		12-17
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 [5,6]		18

1. PHYS 211 and PHYS 250 require a grade of C or better.
2. 6 credits must be at the 400-level.
3. A maximum of 12 credits of Independent Study (296, 496) may be applied toward credits for graduation.
4. Students may apply ROTC credits toward the Program List.
5. Only the 9 credits at the 400 level require a grade of C or better.
6. Life sciences include BIOL, BIOTC, BMB, FRNSC, MICRB. Mathematical sciences include CMPSC, DS, MATH, STAT. Physical sciences include ASTRO, CHEM, PHYS.

Life Science Option (74 credits)

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

Code	Title	Credits
Additional Courses		
STAT 200	Elementary Statistics	3-4
or STAT 250	Introduction to Biostatistics	
Select 4 credits from the following:		4
BIOL 220W	Biology: Populations and Communities	
BIOL 230W	Biology: Molecules and Cells	
BIOL 240W	Biology: Function and Development of Organisms	
Select 3-4 credits from the following:		3-4
BIOL 222	Genetics	
BIOL 230W	Biology: Molecules and Cells	
BIOL 322	Genetic Analysis	
BMB 211	Elementary Biochemistry	
BMB/MICRB 251	Molecular and Cell Biology I	
MICRB 201	Introductory Microbiology	
Select 6-8 credits from the following:		6-8
CHEM 202	Fundamentals of Organic Chemistry I	
& CHEM 203	and Fundamentals of Organic Chemistry II	
CHEM 210	Organic Chemistry I	
& CHEM 212	and Organic Chemistry II	
& CHEM 213	and Laboratory in Organic Chemistry	
Select 8-12 credits from the following:		8-12
PHYS 211	General Physics: Mechanics	
& PHYS 212	and General Physics: Electricity and Magnetism	
& PHYS 213	and General Physics: Fluids and Thermal Physics	
& PHYS 214	and General Physics: Wave Motion and Quantum Physics [1]	
PHYS 250	Introductory Physics I	
& PHYS 251	and Introductory Physics II [1]	
Supporting Courses and Related Areas		
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
Select 21-29 credits from program list [2,3]		21-29
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] A maximum of 12 credits of Independent Study (296, 496) may be applied toward credits for graduation.
[3] Students may apply ROTC credits toward the Program List.

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

Code	Title	Credits
Prescribed Courses		
MATH 220	Matrices	2-3
Prescribed Courses: Require a grade of C or better		
MATH 141	Calculus with Analytic Geometry II	4
Additional Courses		
CMPSC 122	Intermediate Programming	3
or CMPSC 132	Programming and Computation II: Data Structures	
CMPSC 360	Discrete Mathematics for Computer Science	3-4
or MATH 311W	Concepts of Discrete Mathematics	
MATH 230	Calculus and Vector Analysis	4
or MATH 251	Ordinary and Partial Differential Equations	
Select 3 credits from the following:		3
CMPSC 121	Introduction to Programming Techniques	
CMPSC 131	Programming and Computation I: Fundamentals	
CMPSC 201	Programming for Engineers with C++	
Select 3-4 credits from the following:		3-4
STAT 200	Elementary Statistics	
STAT 250	Introduction to Biostatistics	
STAT 318	Elementary Probability	
Select 3-4 credits from the following:		3-4
BIOL 222	Genetics	
BIOL 230W	Biology: Molecules and Cells	
BIOL 322	Genetic Analysis	
BMB 211	Elementary Biochemistry	
BMB/MICRB 251	Molecular and Cell Biology I	
MICRB 201	Introductory Microbiology	
Select 8-12 credits from the following:		8-12
PHYS 211 & PHYS 212 & PHYS 213 & PHYS 214	General Physics: Mechanics and General Physics: Electricity and Magnetism and General Physics: Fluids and Thermal Physics and General Physics: Wave Motion and Quantum Physics [1]	
PHYS 250 & PHYS 251	Introductory Physics I and Introductory Physics II [1]	
Supporting Courses and Related Areas		
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
Select 13-20 credits from program list [2,3]		13-20
Supporting Courses and Related Areas: Require a grade of C or better		
Select 9 credits of 400-level CMPSC, MATH, or STAT courses		9

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

[2] A maximum of 12 credits of Independent Study (296, 496) may be applied toward credits for graduation.
[3] Students may apply ROTC credits toward the Program List.

SECONDARY EDUCATION OPTION (94 credits)
Available at the following campuses: Harrisburg

Code	Title	Credits
Prescribed Courses		
STAT 200	Elementary Statistics	4
Prescribed Courses: Require a grade of C or better for teacher certification		
EDUC 313	Secondary Education Field Experience	2
EDUC 314	Learning Theory and Instructional Procedures	3
EDUC 315Y	Social and Cultural Factors in Education	3
EDUC 385	Professional Development in Teaching	3
EDUC 400	Diversity and Cultural Awareness Practices in the K-12 Classroom	3
EDUC 414	Teaching Secondary Science	3
EDUC 458	Behavior Management Strategies for Inclusive Classrooms	3
EDUC 459	Strategies for Effective Teaching in Inclusive Classrooms	3
EDUC 490	Student Teaching	9
Prescribed Courses: Require a Grade of C or Better		
EDPSY 14	Learning and Instruction	3
EDUC 466N	Foundations of Teaching English as a Second Language	3
ENGL 202C	Effective Writing: Technical Writing	3
HDFS 239	Adolescent Development	3
MATH 141	Calculus with Analytic Geometry II	4
PHYS 250	Introductory Physics I	4
PHYS 251	Introductory Physics II	4
Additional Courses		
Additional Courses: Require a grade of C or better		
Select 4 credits from the following:		4
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		
Supporting Courses and Related Areas: Require a Grade of C or Better		
Select 3 credits of GH literature from department list		3
Select a 3 credit EARTH course		3
Select a 3 credit ASTRO course		3
Select 9 credits of 400-level earth or physical science courses		9
Select 12 credits of science or education elective courses		12

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/)

Berks

Ike Shibley

Program Coordinator, Associate Professor
L101G
Reading, PA 19610
610-396-6185
BKScience@psu.edu

Abington

Les Murray
Program Chair
1600 Woodland Road
Abington, PA 19001
ldm12@psu.edu

Harrisburg

Sairam V. Rudrabhatla, Ph.D.
Program Chair
Science and Technology Building, TL 174
Middletown, PA 17057
717-948-6560
svr11@psu.edu

Scranton

Megan Van Etten, Ph.D.
Assistant Professor, Biology
Dawson Building 212A
Dunmore, PA 18512
570-963-2528
mlv18@psu.edu

University Park

Beth Johnson
Director, Science Major
225B Ritenour Building
University Park, PA 16802
814-863-3889
bai107@psu.edu

York

Anne Vardo-Zalik
Associate Professor of Biology
1 Elias Science Building
York, PA 17403
717-718-6705
amv12@psu.edu

Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2024-25 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.

General Science Option: Integrative 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.

First Year

Fall	Credits	Spring	Credits
ENGL 15 or 30H (GWS)‡	3	CAS 100A or 100B (GWS)‡	3
MATH 140 (GQ)*‡#	4	MATH 141 (GQ)‡	4
CHEM 110 (GN)*‡#	3	CHEM 112 (GN)†	3
CHEM 111 (GN)†	1	CHEM 113 (GN)†	1
BIOL 110*#†	4	PHYS 211*#	4
First-Year Seminar	1	General Education Course (GHW)	1.5
	16		**16.5**

Second Year

Fall	Credits	Spring	Credits
BIOL 220W, 230W, or 240W	4	ENGL 202A, 202B, 202C, or 202D (GWS)‡	3
PHYS 212	4	PHYS 213	2
Earth & Mineral Sciences Selection	3	PHYS 214	2
Life or Math or Physical Science Selection	3	STAT 200, 250, 301, or STAT 401	3-4
Program List Selection	3	General Education Course (GA or GH or GS)	3
		General Education Course (GA or GH or GS)	3
	17		**16-17**

Third Year

Fall	Credits	Spring	Credits
Global, Social & Personal Awareness Selection	3	Teamwork & Interpersonal Communication Selection	3
Life or Math or Physical Science Selection	3	Life or Math or Physical Science Selection	3
Program List Selection	3	Program List Selection	3
Program List Selection	3	Program List Selection	3
General Education Course (GA or GH or GS)	3	General Education Course (Integrative Studies)	3
	15		**15**

Fourth Year

Fall	Credits	Spring	Credits
400 Level General Selection	3	400 Level General Selection	3
400 Level Life or Math or Physical Science Selection*	3	400 Level Life or Math or Physical Science Selection*	3
400 Level Life or Math or Physical Science Selection*	3	Program List Selection	3
General Education Course (Integrative Studies)	3	Program List Selection	3
General Education Course (GHW)	1.5	General Education Course (Exploration)	3
	13.5		**15**

Total Credits 124-125

* 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

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.
4 The following courses are offered Spring Semester only: ENGL 202B, PHYS 213, PHYS 214.
5 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.
6 For Earth & Mineral Sciences Selection, consult adviser for list.
7 For Life or Math or Physical 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 400 Level Life or Math or Physical Science Selection, consult adviser for list.
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:

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.

Life Science Option: Integrative Science, B.S. at Berks Campus

First Year

Fall	Credits	Spring	Credits
ENGL 15 or 30H (GWS)‡	3	CAS 100A or 100B (GWS)‡	3
MATH 140 (GQ)*‡#	4	MATH 141 (GQ)‡	4
CHEM 110 (GN)*‡#	3	CHEM 112 (GN)†	3
CHEM 111 (GN)†	1	CHEM 113 (GN)†	1
BIOL 110*‡#	4	BIOL 220W, 230W, or 240W	4
First-Year Seminar	1	General Education Course (GHW)	1.5
	16		**16.5**

Second Year

Fall	Credits	Spring	Credits
CMPSC 101, MATH 250, or STAT 250	3	ENGL 202A, 202B, 202C, or 202D (GWS)‡	3
CHEM 210	3	CHEM 212	3
PHYS 250*#	4	CHEM 213	2
MICRB 201	3	PHYS 251	4
General Education Course (GA or GH or GS)	3	General Education Course (GA or GH or GS)	3
		General Education Course (GA or GH or GS)	3
	16		**18**

Third Year

Fall	Credits	Spring	Credits
Global, Social & Personal Awareness Selection	3	Teamwork & Interpersonal Communication Selection	3
400 Level Life Science Selection*	3	400 Level Life Science Selection*	3
Program List Selection	3	Program List Selection	3
Program List Selection	3	Program List Selection	3
General Education Course (Integrative Studies)	3	General Education Course (Integrative Studies)	3
	15		**15**

Fourth Year

Fall	Credits	Spring	Credits
400 Level General Selection	3	400 Level General Selection	3
400 Level Life Science Selection*	3	Program List Selection	3
Program List Selection	3	Program List Selection	3
Program List Selection	3	Program List Selection	3
General Education Course (Exploration)	3	General Education Course (GHW)	1.5
	15		**13.5**

Total Credits 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

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.
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:

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.

Career Paths

Penn State students with a BS in Integrative 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 Integrative 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)
- American Academy of Physician Assistants (AAPA) (https://www.aapa.org) Physician Assistant Education Association (https://paeaonline.org)

Contact

Berks

DIVISION OF SCIENCE
Luerssen Science Building
Reading, PA 19610
610-396-6185
BKScience@psu.edu

https://berks.psu.edu/academics/bs-science (https://berks.psu.edu/academics/bs-science/)

Abington

DIVISION OF SCIENCE AND ENGINEERING
1600 Woodland Road
Abington, PA 19001
ldm12@psu.edu

https://www.abington.psu.edu/academics/majors-at-abington/science (https://www.abington.psu.edu/academics/majors-at-abington/science/)

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/science-bs (https://harrisburg.psu.edu/science-engineering-technology/science-bs/)

Scranton

Dawson Building 212A
Dunmore, PA 18512
570-963-2528
mlv18@psu.edu (axk55@psu.edu)

https://scranton.psu.edu/academics/degrees/bachelors/science (https://scranton.psu.edu/academics/degrees/bachelors/science/)

University Park

SCIENCE MAJOR PROGRAM OFFICE
225B Ritenour Building
University Park, PA 16802
814-863-3889
bai107@psu.edu

https://science.psu.edu/interdisciplinary-programs/science-major (https://science.psu.edu/interdisciplinary-programs/science-major/)

York

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

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