

BIOLOGY (BS)

Program Description

A BS in Biology provides a broader and more in depth preparation than the BA program for students pursuing a wide variety of professional careers in biology including post-graduate training.

Entering and Completing the Major

In order to earn a degree, you must complete at least one academic major. SPU encourages students to explore various academic paths, so if you change your mind about a major, or want to include an additional program, you are able to do so, as outlined below.

Note that the University encourages you to enter your chosen major(s) as soon as you have determined it and are eligible to join it, especially by the start of your junior year. Students who transfer as juniors and seniors should enter a major within their first two quarters at SPU.

- If this is your first quarter at SPU and you identified a major in this department as your first choice on your application for admission to the University, you have gained entry to the major. To change or add a major, follow these instructions (<https://spu.atlassian.net/1/cp/a3th1keb>).
- If you are an SPU student with an SPU cumulative GPA of 2.0 or better, follow these instructions (<https://spu.atlassian.net/1/cp/a3th1keb>) to enter a major in this department.
- The University requires a grade of C- or better in all classes that apply to a major; however, programs may require higher minimum grades in specific courses. You may repeat an SPU course only once for a higher grade.
- To advance in this program, meet with your faculty advisor regularly to discuss your grades, course progression, and other indicators of satisfactory academic progress. If your grades or other factors indicate that you may not be able to successfully complete the major or minor, your faculty advisor can work with you to explore options, which may include choosing a different major.
- You must complete the major requirements that are in effect in the SPU Undergraduate Catalog for the year you enter the major.

Biology (BS)

101 Credits Minimum, Including 49 Upper Division (UD)

Code	Title	Credits
General Core Requirements		
BIO 2201	General Biology I	5
BIO 2202	General Biology II	5
BIO 2203	General Biology III	5
BIO 3325	Genetics	5
BIO 3899	Scientific Literature	1
BIO 4352	Cell Biology	5
BIO 4330	Evolutionary Mechanisms	5
Select one of the following:		5
BIO 4410	Human Physiology	
BIO 4413	Animal Physiology	
BIO 4415	Plant Physiology	
BIO 4256	Environmental Physiology	
BIO 4418	Neurobiology	

BIO 4419	Medical Virology	
Select one of the following:		5
BIO 3302	Coral Reef Ecology	
BIO 3303	Evolutionary Ecology in the Galapagos Islands	
BIO 3305	Marine Restoration Ecology	
BIO 3310	Ecology	
BIO 4810	Marine Ecology	
BIO 4815	Aquatic Ecology	
BIO 4825	Forest Ecology	
BIO 4835	Conservation Biology	
BIO 4840	Chemical Ecology	
Select one of the following:		5
BIO 3000	Introduction to Biological Anthropology	
BIO 3453	Biodiversity: Plant Identification and Taxonomy	
BIO 4310	Comparative and Human Anatomy	
BIO 4320	Principles of Development	
BIO 4435	Biodiversity: Parasites and Pests	
BIO 4744	Marine Botany	
Section Credits Required		46
Required Supporting Courses		
CHM 1211	General Chemistry I	5
CHM 1212	General Chemistry II	5
Select one of the following Groups:		5
Group A:		
CHM 3225	Quantitative Analysis and Equilibrium	
Group B:		
CHM 1213	General Chemistry III	
CHM 2213	Inorganic Qualitative Analysis	
Group C:		
BIO 4360	Biostatistics	
CHM 3371	Organic Chemistry I	5
CHM 3372	Organic Chemistry II	5
CHM 3373	Organic Chemistry III	5
MAT 1221	Survey of Calculus	5
or MAT 1234	Calculus I	
MAT 2360	Introduction to Statistics for the Sciences	5
Section Credits Required		40
Botany Requirement ¹		
Select one of the following:		
BIO 3453	Biodiversity: Plant Identification and Taxonomy	
BIO 4415	Plant Physiology	
BIO 4744	Marine Botany	
Section Credits Required		
Field Biology Requirement ¹		
Select three credits of the following:		
BIO 3302	Coral Reef Ecology	
BIO 3303	Evolutionary Ecology in the Galapagos Islands	
BIO 3305	Marine Restoration Ecology	
BIO 4256	Environmental Physiology	
BIO 4744	Marine Botany	
BIO 4810	Marine Ecology	
BIO 4815	Aquatic Ecology	

BIO 4825	Forest Ecology	
BIO 4835	Conservation Biology	
Section Credits Required		0
Capstone Experience		
Select one of the following Groups:		3
Group A:		
BIO 4615	Bioethics	
Group B:		
BIO 4978	Biological Research Proposal	
BIO 4979	Biological Research	
Section Credits Required		3
Recommended Courses		
CHM 1213	General Chemistry III	
CHM 2213	Inorganic Qualitative Analysis	
MAT 1235	Calculus II	
Select one of the following Groups:		
Group A:		
PHY 1101	General Physics	
PHY 1102	General Physics	
PHY 1103	General Physics	
Group B:		
PHY 1121	Physics for Science and Engineering	
PHY 1122	Physics for Science and Engineering	
PHY 1123	Physics for Science and Engineering	
Section Credits Required		0
Electives		
Upper Division BIO electives ²		12
Total Credits		101

¹ May be met in other sections.

² Any UD BIO courses not already used in major may count.

Additional Requirements and Information

- Must include 5 credits with substantial lab/field component
- Max 6 credits from BIO 4900-4999 may be applied to major.

Suggested Course Sequence

This suggested course sequence is a potential plan for how to complete the major within four years. Please consult with a departmental faculty advisor for course advisement.

- Students should take the Chemistry Placement test (available in Canvas) prior to New Student Advising.
 - A Chemistry Placement score ≥ 35 is a pre-requisite for BIO 2202 General Biology II and CHM 1211 General Chemistry I
- Students who score < 35 on the Chemistry Placement test, or who would benefit from an introduction to Chemistry, should take CHM 1000 Preparation for General Chemistry in Autumn quarter, then take CHM 1211 General Chemistry I in Winter quarter.
- Students interested in careers in the health sciences should take PPHS 1200 Introduction to the Health Professions and PPHS 3400 Application Workshop. See the Pre-Professional Health Sciences program (<https://catalog.spu.edu/undergraduate/interdisciplinary-programs/pre-professional-health-sciences/>) website for more information.

- Students who are at Math Level 0 or A at time of admission should take ALEKS Math Placement Test (in Canvas).
 - Math Level B is a prerequisite for BIO 2202 General Biology II, BIO 2203 General Biology III, CHM 1212 General Chemistry II and MAT 2360 Introduction to Statistics for the Sciences.
- Students who test into Level 0 or A should plan to take MAT 0144 College Readiness Math I and/or MAT 0145 College Readiness Math II to achieve Math Level B.

Four-Year Plan: >35 on Chemistry Placement Test

Course	Title	Credits
Freshman		
Autumn		
BIO 2201	General Biology I	5
CHM 1211	General Chemistry I	5
FYS 1000	First Year Seminar	3
Credits		13
Winter		
BIO 2202	General Biology II	5
CHM 1212	General Chemistry II	5
PPHS 1200	Introduction to the Health Professions	1
Credits		11
Spring		
BIO 2203	General Biology III	5
CHM 1213	General Chemistry III ¹	3
CHM 2213	Inorganic Qualitative Analysis ¹	2
Credits		10
Any Quarter		
TCOR 1000	The Christian Faith	5
WRI 1000	Academic Inquiry and Writing Seminar	5
Credits		10
Sophomore		
Autumn		
CHM 3371	Organic Chemistry I	5
PHY 1101	General Physics	5
or PHY 1121	or Physics for Science and Engineering	
Credits		10
Winter		
CHM 3372	Organic Chemistry II	5
PHY 1102	General Physics	5
or PHY 1122	or Physics for Science and Engineering	
Credits		10
Spring		
CHM 3373	Organic Chemistry III	5
PHY 1103	General Physics	5
or PHY 1123	or Physics for Science and Engineering	
Credits		10
Any Quarter		
MAT 2360	Introduction to Statistics for the Sciences	5
MAT 1234	Calculus I ²	5
or MAT 1221	or Survey of Calculus	
BIO 4978	Biological Research Proposal (Begin research in years 2 - 4.) ³	1
or BIO 4979	or Biological Research	
Credits		11
Junior		
Autumn		
BIO 3325	Genetics	5
Credits		5

Spring

Apply to graduate!

	Credits	
		0
Any Quarter		
BIO 3899	Scientific Literature	1
Select five credits of ecology from the following:		5
BIO 3302	Coral Reef Ecology	
BIO 3303	Evolutionary Ecology in the Galapagos Islands	
BIO 3305	Marine Restoration Ecology	
BIO 3310	Ecology	
BIO 4810	Marine Ecology	
BIO 4815	Aquatic Ecology	
BIO 4825	Forest Ecology	
BIO 4835	Conservation Biology	
BIO 4840	Chemical Ecology	
Select five credits of taxonomy/diversity from the following:		5
BIO 3000	Introduction to Biological Anthropology	
BIO 3453	Biodiversity: Plant Identification and Taxonomy	
BIO 4310	Comparative and Human Anatomy	
BIO 4320	Principles of Development	
BIO 4744	Marine Botany	
Select five credits of Botany from the following (may be met in other sections):		5
BIO 3453	Biodiversity: Plant Identification and Taxonomy	
BIO 4415	Plant Physiology	
BIO 4744	Marine Botany	
Select three credits of Field Bio in years 3 - 4 (see catalog for options).		3

	Credits	
		19

Senior**Autumn**

BIO 4615	Bioethics ³	3
PPHS 3400	Application Workshop	2

	Credits	
		5

Winter

BIO 4330	Evolutionary Mechanisms	5
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	Credits	
		5

Spring

BIO 4352	Cell Biology	5
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	Credits	
		5

Any Quarter

Select 12 credits upper division BIO courses in years 3-4 not used elsewhere in major.		12
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Select five credits of Physiology core from the following:		5
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BIO 4256	Environmental Physiology	
BIO 4410	Human Physiology	
BIO 4413	Animal Physiology	
BIO 4415	Plant Physiology	
BIO 4418	Neurobiology	
BIO 4419	Medical Virology	

	Credits	
		17

	Total Credits	
		141

¹ May take CHM 3225 Quantitative Analysis and Equilibrium or BIO 4360 Biostatistics instead of CHM 1213 General Chemistry III/CHM 2213 Inorganic Qualitative Analysis - consult with your faculty advisor for the best option.

² Take ALEKS Math Placement Test in Canvas first - a score of ≥ 65 is required for placement in MAT 1221 Survey of Calculus and ≥ 80 is required for placement in MAT 1234 Calculus I. MAT 1235 Calculus II may be required by some graduate programs. Note: MAT 1221 Survey of Calculus is not offered during the 2026-2027 academic year.

³ Students have the option of conducting research (BIO 4978 Biological Research Proposal and BIO 4979 Biological Research) or taking

BIO 4615 Bioethics to complete their Capstone Experience. BIO 4615 is offered in Autumn and Spring quarters.

Freshman Notes

- Take Math Placement Test (in Canvas) if you are at Math Level 0 or A at time of admission. Math Level B is a prerequisite for BIO 2202 General Biology II, BIO 2203 General Biology III, CHM 1212 General Chemistry II and MAT 2360 Introduction to Statistics for the Sciences.

Sophomore Notes

- MAT 2360 Introduction to Statistics for the Sciences is a pre-requisite for BIO 3325 Genetics and BIO 4360 Biostatistics.

Junior Notes

- BIO 3325 Genetics is a pre-requisite for BIO 4330 Evolutionary Mechanisms (Winter only) and BIO 4352 Cell Biology (Spring only).
- Check the time schedule, as most upper division courses are offered only in certain quarters.
- Physics 110x or 112x series is recommended for most graduate programs.

Four-Year Plan: <35 on Chemistry Placement Test

Course	Title	Credits
Freshman		
Autumn		
BIO 2201	General Biology I	5
CHM 1000	Preparation for General Chemistry ¹	2
FYS 1000	First Year Seminar	3
		Credits
		10
Winter		
BIO 2202	General Biology II	5
CHM 1211	General Chemistry I	5
PPHS 1200	Introduction to the Health Professions	1
		Credits
		11
Spring		
BIO 2203	General Biology III	5
CHM 1212	General Chemistry II	5
		Credits
		10
Any Quarter		
TCOR 1000	The Christian Faith	5
WRI 1000	Academic Inquiry and Writing Seminar	5
		Credits
		10
Sophomore		
Autumn		
PHY 1101 or PHY 1121	General Physics or Physics for Science and Engineering	5
		Credits
		5
Winter		
PHY 1102 or PHY 1122	General Physics or Physics for Science and Engineering	5
		Credits
		5
Spring		
CHM 1213	General Chemistry III ²	3
CHM 2213	Inorganic Qualitative Analysis ²	2
PHY 1103 or PHY 1123	General Physics or Physics for Science and Engineering	5
		Credits
		10

Any Quarter		
MAT 2360	Introduction to Statistics for the Sciences	5
MAT 1234 or MAT 1221	Calculus I ³ or Survey of Calculus	5
BIO 4978 or BIO 4979	Biological Research Proposal ⁴ or Biological Research	1
Credits		11
Junior		
Autumn		
BIO 3325	Genetics	5
CHM 3371	Organic Chemistry I	5
Credits		10
Winter		
CHM 3372	Organic Chemistry II	5
Credits		5
Spring		
CHM 3373	Organic Chemistry III	5
Apply to graduate!		
Credits		5
Any Quarter		
BIO 3899	Scientific Literature	1
Select 5 credits of ecology from the following:		5
BIO 3302	Coral Reef Ecology	
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Select five credits of Botany from the following (may be met in other sections):		5
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BIO 4744	Marine Botany	
Select three credits of Field Bio in years 3-4 (see catalog for options).		3
Credits		19
Senior		
Autumn		
BIO 4615	Bioethics ⁴	3
PPHS 3400	Application Workshop	2
Credits		5
Winter		
BIO 4330	Evolutionary Mechanisms	5
Credits		5
Spring		
BIO 4352	Cell Biology	5
Credits		5
Any Quarter		
Select five credits of Physiology core from the following:		5
BIO 4256	Environmental Physiology	
BIO 4410	Human Physiology	
BIO 4413	Animal Physiology	
BIO 4415	Plant Physiology	
BIO 4418	Neurobiology	
BIO 4419	Medical Virology	

Select 12 credits upper division BIO courses in years 3-4 not used elsewhere in major.	12
Credits	17
Total Credits	143

- ¹ CHM 1310 Survey of General Chemistry may be taken instead of CHM 1000 Preparation for General Chemistry, particularly for students who would benefit from additional laboratory experience.
- ² May take CHM 3225 Quantitative Analysis and Equilibrium or BIO 4360 Biostatistics instead of CHM 1213 General Chemistry III/CHM 2213 Inorganic Qualitative Analysis - consult with your faculty advisor for best option.
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Sophomore Notes

- MAT 2360 Introduction to Statistics for the Sciences is a pre-requisite for BIO 3325 Genetics and BIO 4360 Biostatistics.
- Physics (either 110x or 112x series) is recommended for most graduate programs.

Junior Notes

- BIO 3325 Genetics is a pre-requisite for BIO 4330 Evolutionary Mechanisms (Winter only) and BIO 4352 Cell Biology (Spring only).
- Check the time schedule, as most upper division courses are offered only in certain quarters.