BIOLOGICAL SCIENCE, B.S.

Mission

The mission of the Bachelor of Science in Biological Sciences (https://www.biola.edu/degrees/u/biological-science-bs/) is to provide an academically stimulating and challenging environment for intellectual and spiritual growth, preparing students to pursue careers in scientific research, industry, academia, and health care.

Degree Program

A Bachelor of Science degree in Biological Science is offered upon completion of the University baccalaureate and major requirements. The Bachelor of Science degree in Biological Science offers four different concentrations: Environmental Science, General Biology, Pre-Med/Pre-Health Care Professional, and Secondary Instruction.

Learning Outcomes

Program Learning Outcomes

Upon completion of the Bachelor of Science in Biological Sciences, students will be able to:

1. Apply the scientific method in research (ULO 3).
2. Explain the biomolecular basis of life at the cellular level (ULO 1).
3. Describe and classify the diversity of organismal form, structure and function, and the relationship of the organisms to one another and the environment (ULO 1).
4. Integrate faith and scientific knowledge to practice science with integrity, steward creation, and articulate the merit of their worldview (ULO 2).

Each Program Learning Outcome (PLO) listed above references at least one of the University Learning Outcomes (ULO 1, 2, 3), which may be found in the General Information section (http://catalog.biola.edu/general-information/#UniversityLearningOutcomes) of this catalog.

Admission Recommendations

Admission Recommendations

Recommended high school courses are: one year of biology, one year of chemistry, three years of mathematics, and two years of foreign language. One year of physics is desirable. The student should be aware that Advanced Placement (AP) science courses may not be used to fulfill science requirements for this degree.

Program Requirements

Graduate/Professional School Requirements

The student should be aware that most graduate programs and many professional schools require an overall minimum GPA of 3.0 and that a grade of C or better was earned for all science courses and they will not accept Advanced Placement science credit to fulfill the entrance requirements.

Curriculum Requirements

Concentrations

General Biology (65+ Credits)

Code	Title	Credits
All Biological Science majors meet the Core Curriculum requirement of 6 credits in science and mathematics within the major. The foreign language requirement is met by two years of high school study in the same language or four credits of college foreign language. PHIL 215 is strongly recommended and meets the Philosophy Core Curriculum requirement.		
Program Courses		
BIOS 111 & BIOS 113	Fundamentals of Cellular and Molecular Biology and Fundamentals of Cellular and Molecular Biology Laboratory	4
BIOS 112 & BIOS 114	Fundamentals of Organismal Biology and Fundamentals of Organismal Biology Laboratory	4
BIOS 200	Sophomore Writing Seminar	1
BIOS 222	Botany	4
BIOS 281	Physiology	4
or BIOS 282	Microbiology	
or BIOS 380	Advanced Microbiology	
or BIOS 381	Advanced Physiology	
BIOS 312	Cell and Molecular Biology	3
BIOS 322	Laboratory in Cell and Molecular Biology	1
BIOS 332 & BIOS 334	Genetics and Laboratory in Genetics	4
BIOS 401	General Ecology	4
BIOS 490	Directed Research	1
or BIOS 470	Seminar in Advanced Biology	
or BIOS 480	Internship	
Electives: Select a minimum of 8 credits of upper-division Biological Sciences courses.		8
The following minimum of 27-30 credits of supporting sciences from the Departments of Chemistry, Physics and Engineering and Mathematical Sciences are also required including: [1]		
CHEM 107	Introduction to Chemistry [2]	3
CHEM 105 & CHEM 115	General Chemistry I and General Chemistry I Lab	4
CHEM 106 & CHEM 116	General Chemistry II and General Chemistry II Lab	4
CHEM 301 & CHEM 311	Organic Chemistry I and Laboratory in Organic Chemistry I	4
CHEM 302 & CHEM 312	Organic Chemistry II and Laboratory in Organic Chemistry II	4
PHSC 111 & PHSC 117	Physics I and Physics I Laboratory [3]	4

or PHSC 100 & PHSC 117	Physics I with Foundations and Physics I Laboratory	
or PHSC 132 & PHSC 134	General Physics I: Mechanics and Heat and General Physics I Laboratory	
PHSC 112 & PHSC 118	Physics II and Physics II Laboratory	4
or PHSC 233 & PHSC 237	General Physics II: Electricity and Magnetism and General Physics II Laboratory	
Select one of the following:		3-4
MATH 125	Precalculus Mathematics	
MATH 150	Calculus I	
MATH 210	Introduction to Probability and Statistics	
MATH 318	Biostatistics	
Program Course Requirements: 65-69 credits		
Core Curriculum Requirements [4]		**57-61**
Total Credits		**122-130**

[1] The following courses do not count as supporting science or major electives: BIOS 100, BIOS 105, BIOS 120, BIOS 128, BIOS 130.

[2] CHEM 107 is waived for students who meet the qualifications to enter CHEM 105. See the current Placement Options (https://www.biola.edu/academic-advising/incoming/placement-exams/chemistry-105/) for CHEM 105 (https://www.biola.edu/academic-advising/incoming/placement-exams/chemistry-105/) for more information.

[3] All students who do not meet one of the Physics 111 Placement Options (https://www.biola.edu/academic-advising/incoming/placement-exams/physics/) must enroll in PHSC 100. The prerequisite for PHSC 132 is MATH 150 or an Advanced Placement (AP) Calculus AB or BC score of 4 or higher.

[4] See Core Curriculum Program section (http://catalog.biola.edu/general-information/undergraduate-core-curriculum-program/) for details.

Environmental Science (63+ Credits)

Code	Title	Credits
All Biological Science majors meet the Core Curriculum requirement of 6 credits in science and mathematics within the major. The foreign language requirement is met by two years of high school study in the same language or four credits of college foreign language. PHIL 215 is strongly recommended and meets the Philosophy Core Curriculum requirement.		
Program Courses		
BIOS 103	Introduction to Environmental Science	3
BIOS 112 & BIOS 114	Fundamentals of Organismal Biology and Fundamentals of Organismal Biology Laboratory	4
BIOS 200	Sophomore Writing Seminar	1
BIOS 222	Botany	4
BIOS 332 & BIOS 334	Genetics and Laboratory in Genetics	4
or BIOS 281	Physiology	
or BIOS 381	Advanced Physiology	
BIOS 401	General Ecology	4
BIOS 490	Directed Research	1
or BIOS 470	Seminar in Advanced Biology	
or BIOS 480	Internship	
BIOS 300/400 Elective		3
Select a minimum of 8 credits in Organismal Biology Electives		8
BIOS 302	Vertebrate Biology	
BIOS 351	Invertebrate Biology	
BIOS 352	Marine Biology	
BIOS 402	Parasitology [1]	
BIOS 446	Ornithology	
Select a minimum of 8 credits in Environmental Science Electives		8
BIOS 303	Ecological Agriculture	
BIOS 305	Global Development and Ecological Sustainability	
BIOS 306	Land Resources	
BIOS 307	Lake Ecology and Management	
BIOS 325	Environmental Microbiology	
BIOS 335	Field Biology	
BIOS 353	Environmental Ethics	
BIOS 354	Bioethics	
BIOS 355	Environmental Health: An Ecological Perspective	
BIOS 360	Principles of Geographic Information Systems	
BIOS 371	Conservation Biology	
BIOS 372	Restoration Ecology	
BIOS 390	Au Sable Institute of Environmental Studies	
BIOS 410	Topics in Environmental Science	
BIOS 430	Topics in Natural Resource Management	
BIOS 452	Directed Studies in Environmental Sciences	
BIOS 470	Seminar in Advanced Biology	
BIOS 480	Internship	
BIOS 490	Directed Research	
CHEM 332	Environmental Chemistry	
PHSC 103	Geology	
PHSC 104	Geology Laboratory	
The following minimum of 23-26 credits of supporting sciences from the Departments of Chemistry, Physics and Engineering and Mathematical Sciences are also required including: [2]		
CHEM 107	Introduction to Chemistry [3]	3
CHEM 105 & CHEM 115	General Chemistry I and General Chemistry I Lab	4
CHEM 106 & CHEM 116	General Chemistry II and General Chemistry II Lab	4
CHEM 301 & CHEM 311	Organic Chemistry I and Laboratory in Organic Chemistry I	4

or CHEM 321 & CHEM 322	Basic Organic and Biochemistry and Basic Organic and Biochemistry Lab	
MATH 210	Introduction to Probability and Statistics	3
or MATH 318	Biostatistics	
PHSC 111 & PHSC 117	Physics I and Physics I Laboratory [4]	4
or PHSC 100 & PHSC 117	Physics I with Foundations and Physics I Laboratory	
or PHSC 132 & PHSC 134	General Physics I: Mechanics and Heat and General Physics I Laboratory	
PHSC 112 & PHSC 118	Physics II and Physics II Laboratory	4
or PHSC 233 & PHSC 237	General Physics II: Electricity and Magnetism and General Physics II Laboratory	
Program Course Requirements: 63-66 credits		
Core Curriculum Requirements [5]		**57-61**
Total Credits		**120-127**

[1] Additional course(s), which are not program or concentration requirements, are required as prerequisites. See department for advising.

[2] The following courses do not count as supporting science or major electives: BIOS 100, BIOS 105, BIOS 120, BIOS 128, BIOS 130.

[3] CHEM 107 is waived for students who meet the qualifications to enter CHEM 105. See the current Placement Options for CHEM 105 (https://www.biola.edu/academic-advising/incoming/placement-exams/chemistry-105/) for more information.

[4] All students who do not meet one of the Physics 111 Placement Options (https://www.biola.edu/academic-advising/incoming/placement-exams/physics/) must enroll in PHSC 100. The prerequisite for PHSC 132 is MATH 150 or an Advanced Placement (AP) Calculus AB or BC score of 4 or higher.

[5] See Core Curriculum Program section (http://catalog.biola.edu/general-information/undergraduate-core-curriculum-program/) for details.

Pre-Med/Pre-Health Care Professional (65+ Credits)

Code	Title	Credits
All Biological Science majors meet the Core Curriculum requirement of 6 credits in science and mathematics within the major. The foreign language requirement is met by two years of high school study in the same language or four credits of college foreign language. PHIL 215 is strongly recommended and meets the Philosophy Core Curriculum requirement.		
Program Courses		
BIOS 111 & BIOS 113	Fundamentals of Cellular and Molecular Biology and Fundamentals of Cellular and Molecular Biology Laboratory	4
BIOS 112 & BIOS 114	Fundamentals of Organismal Biology and Fundamentals of Organismal Biology Laboratory	4
BIOS 200	Sophomore Writing Seminar	1
BIOS 281	Physiology	4
or BIOS 381	Advanced Physiology	
BIOS 312	Cell and Molecular Biology	3
BIOS 322	Laboratory in Cell and Molecular Biology	1
BIOS 332 & BIOS 334	Genetics and Laboratory in Genetics	4
BIOS 401	General Ecology	4
or BIOS 355	Environmental Health: An Ecological Perspective	
BIOS 411	General Biochemistry I	3
or BIOS 412	General Biochemistry II	
BIOS 490	Directed Research	1
or BIOS 470	Seminar in Advanced Biology	
or BIOS 480	Internship	
Electives: Select a minimum of 9 credits of upper-division Biological Sciences courses.		9
The following minimum of 27-30 credits of supporting sciences from the Departments of Chemistry, Physics, and Engineering and Mathematical Sciences are also required, including:		
CHEM 107	Introduction to Chemistry [1]	3
CHEM 105 & CHEM 115	General Chemistry I and General Chemistry I Lab	4
CHEM 106 & CHEM 116	General Chemistry II and General Chemistry II Lab	4
CHEM 301 & CHEM 311	Organic Chemistry I and Laboratory in Organic Chemistry I	4
CHEM 302 & CHEM 312	Organic Chemistry II and Laboratory in Organic Chemistry II	4
PHSC 111 & PHSC 117	Physics I and Physics I Laboratory [2]	4
or PHSC 100 & PHSC 117	Physics I with Foundations and Physics I Laboratory	
or PHSC 132 & PHSC 134	General Physics I: Mechanics and Heat and General Physics I Laboratory	
PHSC 112 & PHSC 118	Physics II and Physics II Laboratory	4
or PHSC 233 & PHSC 237	General Physics II: Electricity and Magnetism and General Physics II Laboratory	
Select one of the following:		3-4
MATH 125	Precalculus Mathematics	
MATH 150	Calculus I	
MATH 210	Introduction to Probability and Statistics	
MATH 318	Biostatistics	
Program Course Requirements: 65-69 credits		
Core Curriculum Requirements [3]		**57-61**
Total Credits		**122-130**

[1] CHEM 107 is waived for students who meet the qualifications to enter CHEM 105. See the current Placement Options for CHEM 105 (https://www.biola.edu/academic-advising/incoming/placement-exams/chemistry-105/) for more information.

[2] All students who do not meet one of the Physics 111 Placement Options (https://www.biola.edu/academic-advising/incoming/placement-exams/physics/) must enroll in PHSC 100. The prerequisite for PHSC 132 is MATH 150 or an Advanced Placement (AP) Calculus AB or BC score of 4 or higher.

[3] See Core Curriculum Program section (http://catalog.biola.edu/general-information/undergraduate-core-curriculum-program/) for details.

Secondary Instruction (72+ credits)

For those interested in teaching Biology at the high school level, this concentration provides coursework that, combined with successfully passing the California Subject Examinations for Teachers (CSET), leads to a California Single Subject Teaching Credential in Biology. The Professional Teacher Preparation Program leading to a California Teaching Credential at Biola University is subject to change in response to new legislation. See a credential analyst in the School of Education for current information on completing the requirements for a teaching credential. Students must consult with both their major advisor and a School of Education advisor.

Code	Title	Credits
Biological Science, Secondary Instruction students meet the Core Curriculum requirement of 12 credits in behavioral science, history, science, and mathematics within the major. The foreign language requirement is met by two years of high school study in the same language or four credits of college foreign language. PHIL 215 is strongly recommended and meets the Philosophy Core Curriculum requirement.		
Program Courses		
Students must complete a minimum of 31 credits of Biological Science courses and a minimum of 18 credits of Chemistry, Physics, and Mathematics courses including the following: [1]		
BIOS 103	Introduction to Environmental Science	3
BIOS 111 & BIOS 113	Fundamentals of Cellular and Molecular Biology and Fundamentals of Cellular and Molecular Biology Laboratory	4
BIOS 112 & BIOS 114	Fundamentals of Organismal Biology and Fundamentals of Organismal Biology Laboratory	4
BIOS 200	Sophomore Writing Seminar	1
BIOS 236	Principles of Human Anatomy and Physiology	4
or BIOS 281	Physiology	
BIOS 312	Cell and Molecular Biology	3
BIOS 332 & BIOS 334	Genetics and Laboratory in Genetics	4
BIOS 401	General Ecology	4
CHEM 107	Introduction to Chemistry [2]	3
CHEM 105 & CHEM 115	General Chemistry I and General Chemistry I Lab	4
CHEM 106 & CHEM 116	General Chemistry II and General Chemistry II Lab	4
CHEM 301	Organic Chemistry I	3
or CHEM 321	Basic Organic and Biochemistry	
HIST 200	United States History To 1865 [3]	3
or POSC 225	Survey of American Government	
PHSC 111 & PHSC 117	Physics I and Physics I Laboratory [4]	4
or PHSC 100 & PHSC 117	Physics I with Foundations and Physics I Laboratory	
or PHSC 132 & PHSC 134	General Physics I: Mechanics and Heat and General Physics I Laboratory	
PSYC 200	Introduction to Psychology [5]	3
MATH 210	Introduction to Probability and Statistics	3
or MATH 318	Biostatistics	
Select at least 4 credits of Biological Science elective courses		4
Education Courses		
LEDU 301	Introduction to Teaching	3
LEDU 330	Psychological Foundations of Education	3
LEDU 341	Methods of Teaching Linguistically Diverse Students	3
LEDU 425	Secondary Content Area Reading	3
LEDU 433	Single Subject Pedagogy	2
LEDU 438	Secondary Curriculum, Differentiation, and Assessment	3
Student teaching (12 credits) may be taken as a graduate student and is not required for undergraduate graduation. Please meet with an advisor in the School of Education.		
LEDU 450	Secondary Student Teaching I	
LEDU 452	Secondary Student Teaching II	
Program Course Requirements: 72-75 credits		
Core Curriculum Requirements [6]		**51-55**
Total Credits		**123-130**

[1] The following courses do not count as supporting science or major electives: BIOS 100, BIOS 105, BIOS 120, BIOS 128, BIOS 130.

[2] CHEM 107 is waived for students who meet the qualifications to enter CHEM 105. See the current Placement Options for CHEM 105 (https://www.biola.edu/academic-advising/incoming/placement-exams/chemistry-105/) for more information.

[3] The California Commission on Teacher Credentialing requires that a teaching credential candidate must have completed a minimum 2-credit course that covers the U.S. Constitution or fulfill this requirement by examination. Biola University students may complete this requirement by taking either HIST 200 or POSC 225 with a grade of C or better. Students receiving AP college credit for either HIST 200 or POSC 225 will also meet this requirement. Transfer coursework must be reviewed by a credential analyst in the School of Education. Either course fulfills the History Core Curriculum requirement.

[4] All students who do not meet one of the Physics 111 Placement Options (https://www.biola.edu/academic-advising/incoming/placement-exams/physics/) must enroll in PHSC 100. The prerequisite for PHSC 132 is MATH 150 or an Advanced Placement (AP) Calculus AB or BC score of 4 or higher.

[5] Fulfills the Behavioral Science Core Curriculum requirement.

[6] See Core Curriculum Program section (http://catalog.biola.edu/general-information/undergraduate-core-curriculum-program/) for details.

Secondary Education Minor

For those interested in teaching Biology at the high school level, this minor provides coursework that, combined with successfully passing the California Subject Examinations for Teachers (CSET), leads to a California Single Subject Teaching Credential in Biology. The Professional Teacher Preparation Program leading to a California Teaching Credential at Biola University is subject to change in response to new legislation. See a credential analyst in the School of Education for current information on completing the requirements for a teaching credential. Students must consult with both their major advisor and a School of Education advisor. Refer to the Education section of the catalog or meet with a credential analyst in the School of Education for program requirements.

Candidates who take the following 20 credits qualify for a Secondary Education Minor.

Code	Title	Credits
Program Courses		
Behavioral Science Coursework		
PSYC 200	Introduction to Psychology [1]	3
Teacher Preparation Coursework [2]		
LEDU 301	Introduction to Teaching	3
LEDU 330	Psychological Foundations of Education	3
LEDU 341	Methods of Teaching Linguistically Diverse Students	3
LEDU 425	Secondary Content Area Reading	3
LEDU 433	Single Subject Pedagogy	2
LEDU 438	Secondary Curriculum, Differentiation, and Assessment	3
Total Credits		**20**

[1] PSYC 200 will count toward the Core Curriculum requirement for Behavioral Science.

[2] In order to apply the Teacher Preparation Coursework classes towards any California credential, students must earn at least a B- in each of these classes.

Course Sequence

NOTE: The course sequence table is designed by the major department and is one way that the classes will work out properly in sequence for your major. However, there are alternative or flexible ways to rotate some of the classes within the same year/level and sometimes between year levels. Please contact your major department advisor to discuss flexible alternatives in scheduling the sequence of your classes.

Taking coursework during the summer session may also be an option to accelerate your degree path.

See Core Curriculum Program section (http://catalog.biola.edu/general-information/undergraduate-core-curriculum-program/) for a list of approved Core Curriculum courses.

- **General Biology (p. 5)**
- **Environmental Science (p. 6)**
- **Pre-Med/Pre-Health Care Professional (p. 6)**
- **Secondary Instruction (p. 7)**

Biological Science, B.S. General Biology (BSGB)

First Year

Fall	Credits	Spring	Credits
BBST 103 or 165	3	BBST 103 or 165	3
BIOS 112 & BIOS 114	4	BIOS 111 & BIOS 113	4
CHEM 105 & CHEM 115 (or CHEM 107 if needed per Department)	4	CHEM 106 & CHEM 116	4
ENGL 100 or 112	3	KNES 107	1
GNST 102	1		
	15		**12**

Second Year

Fall	Credits	Spring	Credits
BBST 209 or 210	3	BBST 209 or 210	3
BBST 251	3	BIOS 200	1
BIOS 281, 282, 380, or 381	4	BIOS 222	4
CHEM 301 & CHEM 311	4	CHEM 302 & CHEM 312	4
MATH 125, 150, 210, or 318	3-4	Communication (see Core Curriculum)	3
		KNES Activity (see Core Curriculum)	1
	17-18		**16**

Third Year

Fall	Credits	Spring	Credits
BBST 365	3	BBST 354	3
BIOS 312	3	BIOS 322	1
ENGL 313	3	BIOS 401	4
PHSC 111 & PHSC 117	4	PHSC 112 & PHSC 118	4
Fine Arts (see Core Curriculum)	3	Literature (see Core Curriculum)	3
		Writing Competency Requirement	
		Graduation Application due in Registrar's Office	
	16		**15**

Fourth Year

Fall	Credits	Spring	Credits
BBST 300/400 Bible Elective	3	BBST 300/400 Bible Elective	3
BIOS 332 & BIOS 334	4	BBST 465	3
BIOS 470, 480, or 490	1	BIOS Elective (upper-division)	4
BIOS Elective (upper-division)	4	HIST 200, 201, or POSC 225	3
PHIL 215 (strongly recommended Philosophy Core Curriculum course)	3	Behavioral Science (see Core Curriculum)	3
	15		**16**

Total Credits 122-123

Note: If you have taken 2 years of the same foreign language in high school, you have fulfilled your foreign language requirement. Otherwise, contact the Modern Languages Department for placement test instructions.

Biological Science, B.S. Environmental Science (BIES)

First Year

Fall	Credits	Spring	Credits
BBST 103 or 165	3	BBST 103 or 165	3
BIOS 112 & BIOS 114	4	BIOS 103	3
CHEM 105 & CHEM 115 (or CHEM 107 if needed per Department)	4	CHEM 106 & CHEM 116	4
ENGL 100 or 112	3	Communication (see Core Curriculum)	3
GNST 102	1		
KNES 107	1		
	16		**13**

Second Year

Fall	Credits	Spring	Credits
BBST 209 or 210	3	BBST 209 or 210	3
BIOS 200	1	BBST 251	3
CHEM 301 & CHEM 311 (or CHEM 321 & 322)	4	BIOS 222	4
MATH 210 or 318	3	BIOS 300/400 Elective	3
KNES Activity (see Core Curriculum)	1	Behavioral Science (see Core Curriculum)	3
	12		**16**

Third Year

Fall	Credits	Spring	Credits
BBST 365	3	BBST 354	3
Env Sci Elective (upper-division)	4	BIOS 401	4
PHIL 215 (strongly recommended Philosophy Core Curriculum course)	3	ENGL 313	3
PHSC 111 & PHSC 117	4	Organismal BIOS Elective (upper-division)	4
Literature (see Core Curriculum)	3	PHSC 112 & PHSC 118	4
		Writing Competency Requirement	
		Graduation Application due in Registrar's Office	
	17		**18**

Fourth Year

Fall	Credits	Spring	Credits
BBST 300/400 Bible Elective	3	BBST 465	3
BBST 300/400 Bible Elective	3	BIOS 332 & BIOS 334	4
Organismal BIOS Elective (upper-division)	4	BIOS 470, 480, or 490	1
Fine Arts (see Core Curriculum)	3	Env Sci Elective (upper-division)	4
		HIST 200, 201, or POSC 225	3
	13		**15**

Total Credits 120

Note: If you have taken 2 years of the same foreign language in high school, you have fulfilled your foreign language requirement. Otherwise, contact the Modern Languages Department for placement test instructions.

Biological Science, B.S. Pre-Med/Pre-Health Care Professional (BPRE)

First Year

Fall	Credits	Spring	Credits
BBST 103 or 165	3	BBST 103 or 165	3
BIOS 112 & BIOS 114	4	BIOS 111 & BIOS 113	4
CHEM 105 & CHEM 115 (or CHEM 107 if needed per Department)	4	CHEM 106 & CHEM 116	4
ENGL 100 or 112	3	KNES 107	1
GNST 102	1		
	15		**12**

Second Year

Fall	Credits	Spring	Credits
BBST 209 or 210	3	BBST 209 or 210	3
BBST 251	3	BIOS 200	1
BIOS 281 or 381	4	BIOS Elective (upper-division)	3
CHEM 301 & CHEM 311	4	CHEM 302 & CHEM 312	4
MATH 125, 150, 210, or 318	3-4	Communication (see Core Curriculum)	3
		KNES Activity (see Core Curriculum)	1
	17-18		**15**

Third Year

Fall	Credits	Spring	Credits
BBST 365	3	BBST 354	3
BIOS 312	3	BIOS 332 & BIOS 334	4
BIOS 322	1	BIOS Elective (upper-division)	3
ENGL 313	3	PHSC 112 & PHSC 118	4
PHSC 111 & PHSC 117	4	Literature (see Core Curriculum)	3
		Writing Competency Requirement	
		Graduation Application due in Registrar's Office	
	14		**17**

Fourth Year

Fall	Credits	Spring	Credits
BBST 300/400 Bible Elective	3	BBST 300/400 Bible Elective	3
BIOS 401 or 355	4	BBST 465	3
BIOS 411 or 412	3	BIOS Elective (upper-division)	3
BIOS 470, 480, or 490	1	HIST 200, 201, or POSC 225	3
PHIL 215 (strongly recommended Philosophy Core Curriculum course)	3	Fine Arts (see Core Curriculum)	3
Behavioral Science (see Core Curriculum)	3		
	17		**15**

Total Credits 122-123

Note: If you have taken 2 years of the same foreign language in high school, you have fulfilled your foreign language requirement. Otherwise, contact the Modern Languages Department for placement test instructions.

Biological Science, B.S. Secondary Instruction (BISN)

First Year

Fall	Credits	Spring	Credits
BBST 103 or 165	3	BBST 103 or 165	3
BIOS 112 & BIOS 114	4	BIOS 103	3
CHEM 105 & CHEM 115 (or CHEM 107 if needed per Department)	4	BIOS 111 & BIOS 113	4
GNST 102	1	CHEM 106 & CHEM 116	4
PSYC 200 (fulfills Behavioral Science Core Curriculum requirement)	3	ENGL 100 or 112	3
	15		**17**

Second Year

Fall	Credits	Spring	Credits
BBST 209 or 210	3	BBST 209 or 210	3
BBST 251	3	BIOS 200	1
BIOS 236 or 281	4	BIOS Elective	4
CHEM 301 or 321	3	LEDU 341	3
KNES 107	1	PHIL 215 (strongly recommended Philosophy Core Curriculum course)	3
LEDU 301	3	Communication (see Core Curriculum)	3
	17		**17**

Third Year

Fall	Credits	Spring	Credits
BBST 365	3	BBST 354	3
ENGL 313	3	BIOS 401	4
HIST 200 or POSC 225 (fulfills History Core Curriculum requirement)	3	LEDU 330	3
LEDU 425	3	MATH 210 or 318	3
PHSC 111 & PHSC 117	4	Literature (see Core Curriculum)	3
		Writing Competency Requirement	
		Graduation Application due in Registrar's Office	
	16		**16**

Fourth Year

Fall	Credits	Spring	Credits
BBST 300/400 Bible Elective	3	BBST 300/400 Bible Elective	3
BIOS 332 & BIOS 334	4	BBST 465	3
LEDU 433	2	BIOS 312	3
LEDU 438	3	Fine Arts (see Core Curriculum)	3
		KNES Activity (see Core Curriculum)	1
	12		**13**

Total Credits 123

LEDU 450 (6) and LEDU 452 (6) Student Teaching may be completed at the graduate level and are not required for undergraduate graduation. See catalog and advisor.

Note: If you have taken 2 years of the same foreign language in high school, you have fulfilled your foreign language requirement. Otherwise, contact the Modern Languages Department for placement test instructions.

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NOTE: The course sequence table is designed by the major department and is one way that the classes will work out properly in sequence for your major. However, there are alternative or flexible ways to rotate some of the classes within the same year/level and sometimes between year levels. Please contact your major department advisor to discuss flexible alternatives in scheduling the sequence of your classes.

Taking coursework during the summer session may also be an option to accelerate your degree path.

See Core Curriculum Program section (http://catalog.biola.edu/general-information/undergraduate-core-curriculum-program/) for a list of approved Core Curriculum courses.

- **General Biology (p. 7)**
- **Environmental Science (p. 8)**
- **Pre-Med/Pre-Health Care Professional (p. 8)**
- **Secondary Instruction (p. 8)**

Biological Science, B.S. General Biology (BSGB)

First Year

Fall	Credits	Spring	Credits
HNRS 101	4	HNRS 105	4
HNRS 102	4	HNRS 106	4
BIOS 112 & BIOS 114	4	BIOS 111 & BIOS 113	4
CHEM 105 & CHEM 115 (or CHEM 107 if needed per Department)	4	CHEM 106 & CHEM 116	4
GNST 102	1	KNES 107	1
	17		**17**

Second Year

Fall	Credits	Spring	Credits
HNRS 210	4	HNRS 230	4
HNRS 215	4	HNRS 231	4
BIOS 281, 282, 380, or 381	4	BIOS 200	1
CHEM 301 & CHEM 311	4	BIOS 222	4
		CHEM 302 & CHEM 312	4
	16		**17**

Third Year

Fall	Credits	Spring	Credits
HNRS 324	4	HNRS 337	4
HNRS 326	2	HNRS 339	2
MATH 125, 150, 210, or 318	3	BIOS 401	4
PHSC 111 & PHSC 117	4	ENGL 313	3
KNES Activity (see Core Curriculum)	1	PHSC 112 & PHSC 118	4
	14		**17**

Fourth Year

Fall	Credits	Spring	Credits
HNRS 443	4	HNRS 458	4
BIOS 332 & BIOS 334	4	BBST 465	3
BIOS 470, 480, or 490	1	BIOS 312	3
BIOS Elective (upper-division)	4	BIOS 322	1

		BIOS Elective (upper-division)	4
	13		**15**

Total Credits 126

Note: If you have taken 2 years of the same foreign language in high school, you have fulfilled your foreign language requirement. Otherwise, contact the Modern Languages Department for placement test instructions.

Biological Science, B.S. Environmental Science (BIES)

First Year

Fall	Credits	Spring	Credits
HNRS 101	4	HNRS 105	4
HNRS 102	4	HNRS 106	4
BIOS 112 & BIOS 114	4	BIOS 103	3
CHEM 105 & CHEM 115 (or CHEM 107 if needed per Department)	4	CHEM 106 & CHEM 116	4
GNST 102	1	KNES 107	1
	17		**16**

Second Year

Fall	Credits	Spring	Credits
HNRS 210	4	HNRS 230	4
HNRS 215	4	HNRS 231	4
BIOS 200	1	BIOS 222	4
CHEM 301 & CHEM 311 (or CHEM 321 & 322)	4	BIOS 300/400 Elective	3
KNES Activity (see Core Curriculum)	1		
	14		**15**

Third Year

Fall	Credits	Spring	Credits
HNRS 324	4	HNRS 337	4
HNRS 326	2	HNRS 339	2
PHSC 111 & PHSC 117	4	BIOS 401	4
Environmental Science Elective	4	PHSC 112 & PHSC 118	4
		Organismal BIOS Elective	4
	14		**18**

Fourth Year

Fall	Credits	Spring	Credits
HNRS 443	4	HNRS 458	4
ENGL 313	3	BBST 465	3
MATH 210 or 318	3	BIOS 332 & BIOS 334	4
Organismal BIOS Elective	4	BIOS 470, 480, or 490	1
		Environmental Science Elective	4
	14		**16**

Total Credits 124

Note: If you have taken 2 years of the same foreign language in high school, you have fulfilled your foreign language requirement. Otherwise, contact the Modern Languages Department for placement test instructions.

Biological Science, B.S. Pre-Med/Pre-Health Care Professional (BPRE)

First Year

Fall	Credits	Spring	Credits
HNRS 101	4	HNRS 105	4
HNRS 102	4	HNRS 106	4
BIOS 112 & BIOS 114	4	BIOS 111 & BIOS 113	4
CHEM 105 & CHEM 115 (or CHEM 107 if needed per Department)	4	CHEM 106 & CHEM 116	4
GNST 102	1	KNES 107	1
	17		**17**

Second Year

Fall	Credits	Spring	Credits
HNRS 210	4	HNRS 230	4
HNRS 215	4	HNRS 231	4
BIOS 281 or 381	4	BIOS 200	1
CHEM 301 & CHEM 311	4	CHEM 302 & CHEM 312	4
		KNES Activity (see Core Curriculum)	1
	16		**14**

Third Year

Fall	Credits	Spring	Credits
HNRS 324	4	HNRS 337	4
HNRS 326	2	HNRS 339	2
BIOS 411 or 412	3	BIOS 312	3
BIOS 470, 480, or 490	1	BIOS 322	1
PHSC 111 & PHSC 117	4	ENGL 313	3
		PHSC 112 & PHSC 118	4
	14		**17**

Fourth Year

Fall	Credits	Spring	Credits
HNRS 443	4	HNRS 458	4
BIOS 332 & BIOS 334	4	BBST 465	3
BIOS 355 or 401	4	BIOS Elective (upper-division)	3
BIOS Elective (upper-division)	3	BIOS Elective (upper-division)	3
		MATH 125, 150, 210, or 318	3-4
	15		**16-17**

Total Credits 126-127

Note: If you have taken 2 years of the same language in high school, you have fulfilled your foreign language requirement. Otherwise, contact Modern Language Department for placement test instructions.

Biological Science, B.S. Secondary Instruction (BISN)

First Year

Fall	Credits	Spring	Credits
HNRS 101	4	HNRS 105	4
HNRS 102	4	HNRS 106	4
BIOS 112 & BIOS 114	4	BIOS 111 & BIOS 113	4
CHEM 105 & CHEM 115 (or CHEM 107 if needed per Department)	4	CHEM 106 & CHEM 116	4

GNST 102	1		
	17		**16**

Second Year

Fall	**Credits**	**Spring**	**Credits**
HNRS 210	4	HNRS 230	4
HNRS 215	4	HNRS 231	4
BIOS 236 or 281	4	BIOS 103	3
CHEM 301 or 321	3	BIOS 200	1
PSYC 200	3	KNES 107	1
		LEDU 301	3
	18		**16**

Third Year

Fall	**Credits**	**Spring**	**Credits**
HNRS 324	4	HNRS 337	4
HNRS 326	2	HNRS 339	2
ENGL 313	3	BIOS 401	4
PHSC 111 & PHSC 117	4	LEDU 425	3
LEDU 341	3	MATH 210 or 318	3
		KNES Activity (see Core Curriculum)	1
	16		**17**

Fourth Year

Fall	**Credits**	**Spring**	**Credits**
HNRS 443	4	HNRS 458	4
BIOS 332 & BIOS 334	4	BBST 465	3
BIOS Elective	4	BIOS 312	3
LEDU 330	3	LEDU 433	2
		LEDU 438	3
	15		**15**

Total Credits 130

Note: If you have taken 2 years of the same language in high school, you have fulfilled your foreign language requirement. Otherwise, contact the Modern Languages Department for placement test instructions.