

# BIOLOGY, B.A.

Biology is a dynamic science aimed at understanding living organisms and how they interact with the environment. Biological research seeks to answer a broad range of questions, from factors that affect human health to ecological issues.

Saint Louis University's biology program offers courses that emphasize concepts over facts and aim to provide a foundation for careers in the life sciences, health professions, K-12 education and advanced post-graduate study in various disciplines. The B.A. in Biology at Saint Louis University provides maximum flexibility in selecting upper-division courses and is favored by students seeking double majors. SLU also offers a B.S. in Biology (<https://www.slu.edu/arts-and-sciences/academics/degrees/undergraduate/biology-bs.php>).

- SLU's biology program is enriched by interactions with the School of Medicine, Missouri Botanical Garden, Donald Danforth Plant Science Center and Saint Louis Zoo and a growing number of St. Louis-based life science companies. Research experiences and internships provide students with opportunities to study biology beyond the classroom.
- SLU's Department of Biology (<https://www.slu.edu/arts-and-sciences/biology/>) has a field station (<https://www.slu.edu/arts-and-sciences/biology/reis-biological-station/>) that provides unique opportunities for students to explore ecology, conservation and environmental science in an Ozark forest ecosystem. The field station offers students opportunities to take a summer class, conduct undergraduate research and participate in a semester-long program of field biology coursework.
- Biology students at SLU are encouraged to participate in co-curricular activities. Groups such as Beta Beta Beta, the biology honorary society, and Alpha Epsilon Delta, the pre-professional honor society, are social and academic organizations that further students' interest in biology while exposing them to its relationship with other scientific disciplines.

## Curriculum Overview

The undergraduate curriculum in the Department of Biology is diverse and will meet a variety of interests in the rapidly expanding fields of the biological sciences. It is also designed to provide an intensive educational experience for students in other disciplines who are interested in biology. In addition to courses offered in Macelwane Hall, the department offers courses at the University's Reis Biological Station (<https://www.slu.edu/arts-and-sciences/biology/reis-biological-station/>), located by the Huzzah Creek in the Ozarks.

The Bachelor of Arts degree in biology provides flexibility in selecting upper-level courses and is favored by students interested in double majors.

## Fieldwork and Research Opportunities

Benefits of SLU's biology program include several internship and career opportunities. Advanced undergraduate students with good academic records are encouraged to apply for teaching or learning assistants positions. In addition to a stipend, students gain teaching experience and the opportunity to help others become interested in biology.

Biology majors can enroll in courses that provide credit for structured internships through collaborations with various local organizations,

including the Missouri Botanical Garden, Saint Louis Zoo, Sigma Aldrich, Monsanto and firms in the growing biotechnology field.

## Careers

SLU's biology major develops strong critical thinking and problem-solving skills that provide excellent preparation for professional schools, such as:

- Medical school
- Veterinary science school
- Dental school
- Optometry school
- Graduate school in a broad range of disciplines

The skills biology majors gain also open the door to a wide variety of career options in health care, biotechnology, environmental management, conservation, education and the pharmaceutical industry.

Recent biology majors have been awarded grants from Sigma Xi and the National Science Foundation and prestigious fellowships from the NSF, Fulbright Scholar Program, Mayo Clinic, Smithsonian Institution, NeuroSURF and the American Society for Microbiology.

## Admission Requirements

### Begin Your Application (<http://www.slu.edu/apply.php>)

Saint Louis University also accepts the Common Application.

### Freshman

All applications are thoroughly reviewed with the highest degree of individual care and consideration to all credentials that are submitted. Solid academic performance in college preparatory coursework is a primary concern in reviewing a freshman applicant's file.

To be considered for admission to any Saint Louis University undergraduate program, applicants must be graduating from an accredited high school, have an acceptable HiSET exam score or take the General Education Development (GED) test.

### Transfer

Applicants must be a graduate of an accredited high school or have an acceptable score on the GED.

Students who have attempted fewer than 24 semester credits (or 30 quarter credits) of college credit must follow the above freshmen admission requirements. Students who have completed 24 or more semester credits (or 30 quarter credits) of college credit must submit transcripts from all previously attended college(s).

In reviewing a transfer applicant's file, the Office of Admission holistically examines the student's academic performance in college-level coursework as an indicator of the student's ability to meet the academic rigors of Saint Louis University. Where applicable, transfer students will be evaluated on any courses outlined in the continuation standards of their preferred major.

### International Applicants

All admission policies and requirements for domestic students apply to international students along with the following:

- Demonstrate English Language Proficiency (<https://catalog.slu.edu/academic-policies/office-admission/undergraduate/english-language-proficiency/>)

- Proof of financial support must include:
  - A letter of financial support from the person(s) or sponsoring agency funding the time at Saint Louis University
  - A letter from the sponsor's bank verifying that the funds are available and will be so for the duration of study at the University
- Academic records, in English translation, of students who have undertaken postsecondary studies outside the United States must include the courses taken and/or lectures attended, practical laboratory work, the maximum and minimum grades attainable, the grades earned or the results of all end-of-term examinations, and any honors or degrees received. WES and ECE transcripts are accepted.

## Scholarships and Financial Aid

There are two principal ways to help finance a Saint Louis University education:

- **Scholarships:** Scholarships are awarded based on academic achievement, service, leadership and financial need.
- **Financial Aid:** Financial aid is provided in the form of grants and loans, some of which require repayment.

For priority consideration for merit-based scholarships, apply for admission by Dec. 1 and complete a Free Application for Federal Student Aid (FAFSA) by March 1.

For information on other scholarships and financial aid, visit [www.slu.edu/financial-aid](http://www.slu.edu/financial-aid) (<https://www.slu.edu/financial-aid/>).

## Learning Outcomes

1. Graduates will be able to effectively apply core biological concepts to solve problems.
2. Graduates will be able to critically evaluate scientific information from multiple sources, including that from the primary literature.
3. Graduates will be able to apply biological principles to global societal issues.
4. Graduates will be able to draw valid conclusions from quantitative data.
5. Graduates will be able to formulate hypotheses that address research questions.
6. Graduates will be able to correctly perform common laboratory and/or field techniques.

## Requirements

Biology students must complete a minimum total of **48 credits** for the major.

Code	Title	Credits
University Undergraduate Core ( <a href="https://catalog.slu.edu/academic-policies/academic-policies-procedures/university-core/">https://catalog.slu.edu/academic-policies/academic-policies-procedures/university-core/</a> ) <b>32-35</b>		
<b>Major Requirements</b>		
BIOL 1240 & BIOL 1245	General Biology: Information Flow and Evolution and Principles of Biology I Laboratory	4
BIOL 1260 & BIOL 1265	General Biology: Transformations of Energy and Matter and Principles of Biology II Laboratory	4
BIOL 3010	Evolutionary Biology	3
BIOL 3020	Biochemistry and Molecular Biology	3
BIOL 3030	Principles of Genetics	3

BIOL 3040	Cell Structure & Function	3
CHEM 1110 & CHEM 1115	General Chemistry 1 and General Chemistry 1 Laboratory	4
CHEM 1120 & CHEM 1125	General Chemistry 2 and General Chemistry 2 Laboratory	4
MATH 1510	Calculus I	4
<i>Statistics Course</i>		
MATH 1300 or BIOL 4790	Elementary Statistics with Computers or Biometry	3
<i>Biology Elective Courses</i> <b>13</b>		
Choose a minimum of 13 credits of upper division elective courses (numbered BIOL 3060-BIOL 4980), including one plant and one structured laboratory course.		
<i>General Electives</i>		<b>37-40</b>
<b>Total Credits</b>		<b>120</b>

## Independent Research

A total of 3 credits of BIOL 4960 Independent Research (1-3 cr), BIOL 4970 Library Project (1-3 cr), and/or BIOL 4980 Advanced Independent Study (1-4 cr) can be counted toward the B.A. degree. These courses do not count as structured lab courses.

## Non-Course Requirements

All biology majors are required to participate in first and second-year mentoring sessions and meet with their mentor when in residence.

## Continuation Standards

Students must have a minimum of a 2.00 GPA in their major courses (BIOL) and required related credits (chemistry, mathematics and statistics, physics etc.) by the conclusion of their freshman year. Students who fall below a 2.00 GPA will be placed on probation. If a student fails to obtain at least a 2.00 GPA in their major courses (BIOL) and required related credits by the conclusion of their sophomore year they will not be allowed to continue in the program.

## Graduation Requirements

- Complete a minimum of 120 credits (excluding pre-college level courses numbered below 1000).
- Complete the University Undergraduate Core curriculum requirements.
- Complete major requirements: minimum 30 credits required.
- Complete remaining credits with a second major, minor, certificate and/or electives to reach the minimum of 120 credits required for graduation.
- Achieve at least a 2.00 cumulative grade point average, a 2.00 grade point average in the major(s) and a 2.00 grade point average in the minor/certificate, or related elective credits.
- Complete department-/program-specific academic and performance requirements.
- Complete at least 50% of the coursework for the major and 75% for the minor/certificate through Saint Louis University or an approved study abroad program.
- Complete 30 of the final 36 credits through Saint Louis University or an approved study abroad program.
- Complete an online degree application by the required University deadline.

## Roadmap

Roadmaps are recommended semester-by-semester plans of study for programs and assume full-time enrollment unless otherwise noted.

Courses and milestones designated as critical (marked with !) must be completed in the semester listed to ensure a timely graduation. Transfer credit may change the roadmap.

This roadmap should not be used in the place of regular academic advising appointments. All students are encouraged to meet with their advisor/mentor each semester. Requirements, course availability and sequencing are subject to change.

Course	Title	Credits
<b>Year One</b>		
<b>Fall</b>		
BIOL 1240 & BIOL 1245	General Biology: Information Flow and Evolution and Principles of Biology I Laboratory (BIOL 1240 satisfies CORE 3800)	4
CHEM 1110 & CHEM 1115	General Chemistry 1 and General Chemistry 1 Laboratory	4
CORE 1000	Ignite First Year Seminar (Must be taken in first 36 credit hours at SLU / Cannot carry attributes)	2-3
CORE 1500	Cura Personalis 1: Self in Community (Must be taken in first 36 credit hours at SLU / Cannot carry attributes / Must be taken at SLU)	1
CORE 1900	Eloquentia Perfecta 1: Written and Visual Communication (Should be taken in first 36 credit hours at SLU / Cannot carry attributes)	3
General Electives		1
<b>Credits</b>		<b>15-16</b>
<b>Spring</b>		
Participation in First-year Mentoring Events		
BIOL 1260 & BIOL 1265	General Biology: Transformations of Energy and Matter and Principles of Biology II Laboratory	4
CHEM 1120 & CHEM 1125	General Chemistry 2 and General Chemistry 2 Laboratory	4
CORE 1600	Ultimate Questions: Theology	3
General Electives		4
<b>Credits</b>		<b>15</b>
<b>Year Two</b>		
<b>Fall</b>		
Participation in Second-year Mentoring		
BIOL 3020	Biochemistry and Molecular Biology	3
MATH 1510	Calculus I (satisfies CORE 3200)	4
CORE 1700	Ultimate Questions: Philosophy	3
CORE 1200	Eloquentia Perfecta 2: Oral and Visual Communication	3
General Electives		2
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
BIOL 3040	Cell Structure & Function	3

Statistics Elective (p. 3)		3-4
CORE 2500	Cura Personalis 2: Self in Contemplation	0
General Electives		9
<b>Credits</b>		<b>15-16</b>
<b>Year Three</b>		
<b>Fall</b>		
BIOL 3010	Evolutionary Biology	3
Biology Elective		3
CORE 3400	Ways of Thinking: Aesthetics, History, and Culture	3
General Electives		6
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
BIOL 3030	Principles of Genetics	0-3
Biology Elective		3
CORE 3600	Ways of Thinking: Social and Behavioral Sciences	3
CORE 4000	Collaborative Inquiry	2-3
General Electives		7
<b>Credits</b>		<b>15-19</b>
<b>Year Four</b>		
<b>Fall</b>		
Biology Elective		3
Laboratory Elective (p. 3)		1-5
CORE 3500	Cura Personalis 3: Self in the World	1
General Electives		10
<b>Credits</b>		<b>15-19</b>
<b>Spring</b>		
Plant Elective (p. 4)		3-4
General Electives		12
<b>Credits</b>		<b>15-16</b>
<b>Total Credits</b>		<b>120-131</b>

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See information in the program notes.

## Program Notes

### Statistics Electives

Code	Title	Credits
MATH 1300	Elementary Statistics with Computers	3
BIOL 4790	Biometry	4

### Laboratory Electives

Code	Title	Credits
BIOL 3060	Cell Structure & Function Laboratory	1
BIOL 3100	Experiments in Genetics Lab	1
BIOL 3260	Biology of Plants & Fungi	4
BIOL 3420	Comparative Anatomy of the Vertebrates	5
BIOL 3470	General Physiology Laboratory	1
BIOL 4050	Molecular Technique Lab	2
BIOL 4100	Natural History of Vertebrates	4
BIOL 4115	Forest Park Living Lab Field Ecology Techniques	1
BIOL 4120	Field Botany	5

BIOL 4130	Field Mammalogy	5
BIOL 4140	Field Ornithology	5
BIOL 4160	Microbial Ecology and Molecular Evolution	4
BIOL 4200	Aquatic Ecology	4
BIOL 4260	Biology of Amphibians and Reptiles	4
BIOL 4280	Biology of Fishes	4
BIOL 4320	Cave Biology	4
BIOL 4330	Spring Flora of the Ozarks	4
BIOL 4635	Immunobiology Lab	1
BIOL 4370	Animal Behavior Lab	1
BIOL 4440	Vertebrate Histology: Structure and Function of Tissues	4
BIOL 4650	General Microbiology Laboratory	2

### Plant Electives

Code	Title	Credits
BIOL 3260	Biology of Plants & Fungi	4
BIOL 3490	Plant Physiology	3
BIOL 3450	Economic Botany	3
BIOL 4090	Plant Ecology	3
BIOL 4120	Field Botany	5
BIOL 4330	Spring Flora of the Ozarks	4

## 2+SLU

2+SLU programs are formal transfer agreements for students seeking an associate degree at a partner institution.

- Biology, B.A. (STLCC 2+SLU) (<https://catalog.slu.edu/academic-policies/office-admission/undergraduate/2plusslu/stlcc/biology-ba/>)