Biology

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Peter Raven, Ph.D
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Cheryl S. Asa, Ph.D
Joan E. Bauman, Ph.D

Sigma-Aldrich Corp.
Kevin Kayser, Ph.D

Department of Biochemistry and Molecular Biology, SLU
Dorota Skowyra, Ph.D

Department of Obstetrics, Gynecology, and

Women’s Health, SLU
Gerald S. Zavorsky, Ph.D

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 a broad but intensive educational experience for students in other disciplines who have an interest in biology. In addition to courses offered in the newly renovated Macelwane Building, the department offers courses at the University’s Reis Biological Station located by the Huzzah Creek in the Ozarks.

Programs

The department offers Bachelor of Arts (B.A.), Bachelor of Sciences (B.S.), and minor undergraduate degrees as well as MS(R) and Ph.D. graduate degrees. A Certificate in Conservation and Biodiversity and a degree in Environmental Sciences (in conjunction with the Department of Earth and Atmospheric Sciences) is also available for undergraduates.

Students who pursue either a major or minor in biology must have at least a 2.00 cumulative average in prerequisite(s) for upper division courses in Biology. These are BIOL104, BIOL106 (8 credit hours); CHEM163, CHEM165, CHEM164, and CHEM166 (8 credit hours).

Biology (B.A.)

Required Prerequisite Courses

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BIOL 104</td>
<td>Principles of Biology I</td>
<td>4</td>
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<tr>
<td>BIOL 106</td>
<td>Principles of Biology II</td>
<td>4</td>
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<tr>
<td>CHEM 163</td>
<td>Intro to Chemistry I</td>
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<td>CHEM 165</td>
<td>Intro to Chemistry I Lab</td>
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<td>CHEM 164</td>
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<td>3</td>
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<tr>
<td>CHEM 166</td>
<td>Intro to Chemistry II Lab</td>
<td>1</td>
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Required Upper-Division Biology Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BIOL 302</td>
<td>Molecular Cell Biology I</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 304</td>
<td>Molecular Cell Biology II</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 301</td>
<td>Evolutionary Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 303</td>
<td>Principles of Genetics</td>
<td>3</td>
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A minimum of 25 upper-division credit hours in Biology is required (see lists below of elective courses), including at least one plant science course and a structured laboratory course (which includes 4 or 5 credit lecture/laboratory courses).
Note: A total of 3 hours of Independent Study (BIOL398) or Advanced Independent Study (BIOL498) can be counted toward the B.A. degree.

Required related courses
CHEM 342 Principles of Organic Chem 3
CHEM 343 Principles of Organic Chem 1
CHEM 344 Principles of Organic Chem 3
CHEM 345 Principles of Organic Chem 1
MATH 141 Pre-Calculus 3

Recommended related courses
PHYS 131 Physics I 3
PHYS 133 Physics II 3
MATH 142 Calculus 4
Statistics (one semester) 3

Biology (B.S.)

Required Prerequisite Courses
BIOL 104 Principles of Biology I 4
BIOL 106 Principles of Biology II 4
CHEM 163 Intro to Chemistry I 3
CHEM 165 Intro to Chemistry I Lab 1
CHEM 164 Intro to Chemistry II 3
CHEM 166 Intro to Chemistry II Lab 1

Required Upper-Division Biology Courses
BIOL 302 Molecular Cell Biology I 3
BIOL 304 Molecular Cell Biology II 3
BIOL 301 Evolutionary Biology 3
BIOL 303 Principles of Genetics 3

A minimum of 35 upper-division hours of biology is required. All B.S. students must take at least 10 credit hours from each of two categories (A and B below), at least three structured laboratory experiences (i.e. laboratory courses or 4 or 5 credit lecture/laboratory course) with at least one from each category, at least one plant science course, and one of four Senior Inquiry options (0–4 credits).

Note: BIOL 398, 484, 488, 489 or 498 do not count as structured laboratory courses, nor can they satisfy Group A or Group B elective requirements.

Elective Courses

A. Cellular, Molecular and Developmental Biology*
BIOL306: Cell Laboratory 2
BIOL310: Genetics Laboratory 2
BIOL342: Comparative Anatomy 5
BIOL344: Embryology 5

Note: A total of 4 hours of Independent Study (BIOL 398), Library Project (BIOL 484). Research Project

B. Ecology, Evolutionary and Organismal Biology*
BIOL 326 Biology of Plants & Fungi 4
BIOL 328 Ethnobotany 3
BIOL 401 Sex, Evolution and Behavior 3
BIOL 404 Pollination Biology 3
BIOL 406 Structure & Function of Ecosyst 3
BIOL 409 Plant Ecology 3
BIOL 410 Natural History of Vertebrates 4
BIOL 420 Aquatic Ecology 4
BIOL 421 Biol & Classification of Orchids 3
BIOL 426 Biol of Amphibians & Reptiles 4
BIOL 428 Biology of Fishes 4
BIOL 431 Biology of Birds 4
BIOL 432 Cave Biology 4
BIOL 433 Spring Flora of the Ozarks 4
BIOL 434 Systematic Biology 3
BIOL 436 Animal Behavior 3
BIOL 437 Animal Behavior Laboratory 1
BIOL 438 Biology of Mammals 4
BIOL 448 Conservation Biology 3
BIOL 467 Population Biology 3
BIOL 468 Landscape Ecology 3
BIOL 475 General Ecology 4
BIOL XXX Economic Botany 3
BIOL XXX Applied Population Genetics 3
BIOL XXX GIS in Biology 3

* Courses that satisfy the plant requirement are in italics

Senior Inquiry Options include:
BIOL 484 Library Project and Thesis 1-4
BIOL 485 Graduate Level Course in Biol 0
BIOL 488 Research Project 1-4
BIOL 489 Comprehensive Examination 0

Note: A total of 4 hours of Independent Study (BIOL 398), Library Project (BIOL 484). Research Project
(BIOL 488) or Advanced Independent Study (BIOL 498) can be counted toward the BS degree, yet these courses do not count as structured lab courses nor can they satisfy Group A or Group B elective requirements.

**Required related courses:**
- CHEM 342 Principles of Organic Chem 3
- CHEM 343 Principles of Organic Chem 3
- CHEM 344 Principles of Organic Chem 1
- CHEM 345 Principles of Organic Chem 1
- MATH 142 Calculus I 4
- PHYS 131 Physics I 3
- PHYS 133 Physics II 3
- Statistics 3-4

**Reduced College Core Requirements**
Students pursuing a B.S. degree are eligible to reduce the number of credit hours in Philosophy (from 9 to 6), Theology (from 9 to 6), English Literature (from 6 to 3), and Language (from 9 to 6). Note: Students that drop out of the B.S. degree program and seek a B.A. must fulfill the standard set of college core requirements.

**Certificate in Conservation and Biodiversity**
For students interested in careers in Conservation, Natural Resource Management, Environmental Science.
Requirements: 21 credit hrs including: Ecology, Conservation Biology, Conservation Internship, Biology electives (5 hrs), Interdisciplinary courses (6 hrs)

**Minor**
A minor in Biology may be obtained by students who complete the following prerequisite courses: BIOL 104 and 106 or equivalents (8 credits) and CHEM 163/165 and 164/166 or equivalents (8 credits), and a minimum of 12 credits of upper-division Biology electives selected from BIOL301 through 479 (excluding BIOL 398). For all courses taken as part of the minor, a student must have earned at least a 2.00 grade point average.

**Required Courses**
- BIOL 104 Principles of Biology I 4
- BIOL 106 Principles of Biology II 4
- CHEM 163 Introduction to Chemistry I 3
- CHEM 165 Introduction to Chemistry I Lab 1
- CHEM 164 Introduction to Chemistry II 3
- CHEM 166 Introduction to Chemistry II Lab 1

**Elective Courses**
12 hours of upper division (BIOL301 – BIOL479) electives (excluding BIOL398)