Bachelor of Arts in Biology

Biology

Biology is the study of living systems and is the broadest biological sciences major available at KU. The B.A. Biology degree provides students with much flexibility in their major course choices and can include ecology, microbiology, organismal physiology, and biochemistry.

Undergraduate Admission

Admission to KU

All students applying for admission must send high school and college transcripts to the Office of Admissions. Prospective first-year students should be aware that KU has qualified admission requirements that all new first-year students must meet to be admitted. Consult the Office of Admissions (http://admissions.ku.edu/) for application deadlines and specific admission requirements.

Visit the International Support Services (http://www.iss.ku.edu/) website.

Students considering transferring to KU may see how their college-level course work will transfer on the Office of Admissions (http://credittransfer.ku.edu/) website.

First- and Second-Year Preparation

Because biology study requires preparation in other sciences, students should begin meeting major requirements in the first year. It is particularly important to take CHEM 130 and CHEM 135 in the first year and, for several majors, to take CHEM 330, CHEM 331, CHEM 335, and CHEM 336 in the second year. Ideally, most majors should also take BIOL 150 and BIOL 152 during the first year, as well as BIOL 105.

Majors and Concentrations

Bachelor’s degree requirements in biology are modified as necessary. Current requirements are available in the UBP office and online (http://www.kuub.ku.edu/). Major programs are offered in biochemistry, biology, ecology, evolution, and organismal biology, human biology, microbiology, and molecular, cellular, and developmental biology. Students may choose to concentrate in a range of specialties in the biological sciences, such as botany, cellular biology, developmental biology, environmental biology, ecology, entomology, genetics, marine biology, molecular biology, neurobiology, paleontology, physiology, systematics, or zoology (invertebrate or vertebrate).

Requirements for the B.A. Major in Biology

Major Course Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOL 105</td>
<td>Biology Orientation Seminar</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 130</td>
<td>General Chemistry I</td>
<td>5</td>
</tr>
</tbody>
</table>

CHEM 190  Foundations of Chemistry I, Honors
& CHEM 191 and Foundations of Chemistry I Laboratory, Honors
Chemistry II. Satisfied by one of the following: 5
CHEM 135  General Chemistry II
CHEM 195  Foundations of Chemistry II, Honors
& CHEM 196 and Foundations of Chemistry II Laboratory, Honors
Organic Chemistry I. Satisfied by the following: 3
CHEM 330  Organic Chemistry I
CHEM 380  Organic Chemistry I, Honors
Organic Chemistry I Laboratory. Satisfied by:
CHEM 331  Organic Chemistry I Laboratory 2
Calculus. Satisfied by one of the following: 3-4
MATH 115  Calculus I
MATH 125  Calculus I
MATH 145  Calculus I, Honors
Physics I. Satisfied by one of the following: 4-5
PHSX 114  College Physics I
PHSX 211  General Physics I
& PHSX 216  and General Physics I Laboratory
Physics II. Satisfied by one of the following: 4
PHSX 115  College Physics II
PHSX 212  General Physics II
& PHSX 236  and General Physics II Laboratory

Biology Core Requirements

Principles of Molecular & Cellular Biology. Satisfied by one of the following: 3
BIOL 150  Principles of Molecular and Cellular Biology
BIOL 151  Principles of Molecular and Cellular Biology, Honors
Principles of Organismal Biology. Satisfied by one of the following: 3
BIOL 152  Principles of Organismal Biology
BIOL 153  Principles of Organismal Biology, Honors
Introductory Biology Lab for STEM Majors. Satisfied by:
BIOL 154  Introductory Biology Lab for STEM Majors
Principles of Genetics. Satisfied by one of the following: 4
BIOL 350  Principles of Genetics
BIOL 360  Principles of Genetics, Honors
Evolutionary Biology. Satisfied by:
BIOL 412  Evolutionary Biology 4
Tree of Life / Principles of Ecology / Introduction to Systematics. Satisfied by one of the following: 3-4
BIOL 413  The Tree of Life
BIOL 414  Principles of Ecology
BIOL 428  Introduction to Systematics
Fundamentals / Development / Function. Satisfied by two of the following: 6
BIOL 400  Fundamentals of Microbiology
or BIOL 401  Fundamentals of Microbiology, Honors
BIOL 416  Cell Structure and Function
or BIOL 536  Cell Structure and Function (Honors)
BIOL 417  Biology of Development
BIOL 544  Comparative Animal Physiology
or BIOL 546  Mammalian Physiology
### Major Hours & Major GPA

While completing all required courses, majors must also meet each of the following hour and grade-point average minimum standards:

**Major Hours**
Satisfied by 35 hours of major courses.

**Major Hours in Residence**
Satisfied by a minimum of 15 hours of KU resident credit in the major.

**Major Junior/Senior Hours**
Satisfied by a minimum of 12 hours from junior/senior courses (300+) in the major.

**Major Junior/Senior Graduation GPA**
Satisfied by a minimum of 2.0 KU GPA in junior/senior courses (300+) in the major. GPA calculations include all junior/senior courses in the field of study including F's and repeated courses. See the Semester/Cumulative GPA Calculator (http://clas.ku.edu/undergrad/tools/gpa/).

Below is a sample 4-year plan for students pursuing the BA in Biology. To view the list of courses approved to fulfill KU Core Goals, please visit the KU Core website (http://kucore.ku.edu/courses/).

This degree plan assumes students will have the equivalent of MATH 101 or MATH 104, or equivalent prior to the freshman year, fall semester.

### Freshman

<table>
<thead>
<tr>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 150 or 152 (Goal 3 Natural Science, Major Requirement)</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CHEM 130 (General Science Requirement, BA Quantitative Reasoning (QR))</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>BIOL 105 (General Science Requirement)</td>
<td>1</td>
<td>MATH 115 (General Science Requirement)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Sophomore

<table>
<thead>
<tr>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Semester Language (BA Second Language)</td>
<td>5</td>
<td>2nd Semester Language (BA Second Language)</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 350 or 360 (Major Requirement)</td>
<td>4</td>
<td>Goal 3 Arts and Humanities</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 330 (General Science Requirement)</td>
<td>3</td>
<td>BIOL 412 (Major Requirement)</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 331 (General Science Requirement)</td>
<td>2</td>
<td>Second Area of Study/Elective/Degree/Junior-Senior Hours</td>
<td>3</td>
</tr>
</tbody>
</table>

### Junior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd Semester Language (BA Second Language)</td>
<td>3</td>
<td>4th Semester Language, or 1st semester of Another Language (BA Second Language)</td>
<td>3</td>
</tr>
<tr>
<td>Goal 3 Social Science</td>
<td>3</td>
<td>Goal 2.2 Communication</td>
<td>3</td>
</tr>
<tr>
<td>PHSX 114 (or PHSX 211 &amp; 216 (Goal 1.1 Critical Thinking, General Science Requirement))</td>
<td>4</td>
<td>PHSX 115 (or PHSX 212 &amp; 236 (General Science Requirement))</td>
<td>4</td>
</tr>
<tr>
<td>BIOL Selective 400+ (Major Requirement)</td>
<td>3</td>
<td>BIOL Selective 400+ (Major Requirement)</td>
<td>3</td>
</tr>
<tr>
<td>Second Area of Study/Elective/Degree/Junior-Senior Hours</td>
<td>3</td>
<td>3rd Area of Study/Elective/Degree/Junior-Senior Hours</td>
<td>3</td>
</tr>
</tbody>
</table>

### Senior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 4.2 Global Awareness (300+ suggested)</td>
<td>3</td>
<td>BIOL Elective 400+ (Major Requirement)</td>
<td>2</td>
</tr>
<tr>
<td>Goal 5 Social Responsibility &amp; Ethics</td>
<td>3</td>
<td>BIOL Lab Elective 400+ (Major Requirement)</td>
<td>3</td>
</tr>
<tr>
<td>BIOL Elective 400+ (Major Requirement)</td>
<td>3</td>
<td>Goal 4.1 US Diversity (300+ suggested)</td>
<td>3</td>
</tr>
<tr>
<td>BIOL Lab Elective 400+ (Major Requirement)</td>
<td>2</td>
<td>Second Area of Study/Elective/Degree/Junior-Senior Hours</td>
<td>3</td>
</tr>
</tbody>
</table>

### Total Hours 120

1 The BA requires completion of two courses of collegiate-level writing instruction. Students who test out of Composition will still need to
complete ENGL 102 (or equivalent) and one additional Goal 2.1 course.

2. Requires a Math ACT Score of 26+, a comparable SAT or KU Math Placement Exam score, or credit for MATH 101 or MATH 104 equivalent course. MATH 125 can be taken instead of MATH 115 to fulfill the math requirement.

3. Concurrent or prior enrollment in CHEM 130 is required. BIOL 151 is the honors equivalent of BIOL 150 and offered in the fall semesters. BIOL 153 is the honors equivalent of BIOL 152 and offered in the spring semesters.

4. BIOL 412 is offered only in the spring.

5. Most medical schools require the full CHEM 330, CHEM 331, CHEM 335 and CHEM 336 sequence.

6. Biology major electives: choose from BIOL 413, BIOL 414, and BIOL 428 AND choose two from BIOL 400, BIOL 416, BIOL 417, BIOL 544 or BIOL 546, BIOL 555 or BIOL 606, and BIOL 600. BIOL 413, BIOL 414, and BIOL 544 are only offered in the fall. BIOL 428, BIOL 417, and BIOL 546 are only offered in the spring.

7. 10 credit hours of BIOL 400+ level courses, including at least 4 hours of lab credit and a BIOL Goal 6 course. No more than 3 hours of BIOL 423 and/or BIOL 424 may be applied towards the elective requirement, with no more than 2 hours of BIOL 424 applied towards the laboratory requirement.

8. BIOL 599 is approved to fulfill Goal 6. This goal can also be fulfilled by completion of an approved educational experience, or an approved integration of courses and/or experiences. See your advisor for more information.

9. Visit this website (https://collegeadvising.ku.edu/ba-quantitative-reasoning-courses/) for a list of courses that fulfill the BA Quantitative Reasoning requirement.

10. Hour requirements (incl. 45 jr/sr hrs) are typically met through KU core, degree, major, second area of study and/or elective hours. Students completing the BGS with a major must choose a secondary area of study. Individual degree mapping is done in partnership with your advisor.

* BIOL 105: Biology Orientation Seminar (1 hour online course) is required for the major. It can be taken the summer prior to your freshman year.

Please note:

Students may earn degrees in more than one major within biological sciences, or in a biological science and an area outside biology by meeting the requirements of both degree programs and taking at least 15 hours of courses unique to each major.

All students in the College of Liberal Arts and Sciences are required to complete 120 total hours of which 45 hours must be at the Jr/Sr (300+) level.

The same course cannot be used to fulfill more than one KU Core Goal. However, overlap of a KU Core course with a major or degree-specific requirement is allowed. Overlapping is recommended to allow more opportunities to explore other majors and/or minors.

**Departmental Honors**

Undergraduate majors are eligible to graduate with honors in biology if they fulfill the following requirements:

1. Complete all course work required for the appropriate degree in biology.

2. Achieve a minimum grade-point average of 3.5 in the major.

3. Complete BIOL 499 Introduction to Honors Research with a grade of B or higher.

4. Complete BIOL 699 Biology Honors Research Colloquium with a grade of B or higher.

5. Complete an independent research project under the supervision of a faculty member in an area appropriate to the degree sought.

6. Submit an honors thesis to the honors committee once the research is complete and present the results of the completed research at the honors research symposium.

Students majoring in Human Biology with Anthropology, Applied Behavioral Science, Psychology, or Speech-Language-Hearing concentrations will follow the honors requirements for their respective concentration department.

Specific guidelines and intent forms are available in the Undergraduate Biology Program office and online (http://www.kuub.ku.edu/). Candidates must declare their intent to graduate with honors at least 2 semesters before graduation.

**Study Abroad**

Consult an advisor at least 4 months before undertaking study abroad. Consult the Office of Study Abroad (http://www.studyabroad.ku.edu/), 108 Lippincott Hall, for information about study in one of the many countries (e.g., Scotland, Australia, Switzerland) with special arrangements with KU.