Bachelor of Arts in Microbiology

Why study biology?
Study biology because undergraduates should have the opportunity to explore the breadth of biology that allows them to succeed in their chosen paths beyond the university.

Undergraduate Admission

Admission to KU
All students applying for admission must send high school and college transcripts to the Office of Admissions. Unless they are college transfer students with at least 24 hours of credit, prospective students must send ACT or SAT scores 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 Office of International Student and Scholar Services (http://www.iss.ku.edu) for information about international admissions.

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.

Admission to the College of Liberal Arts and Sciences
Admission to the College is a different process from admission to a major field. Some CLAS departments have admission requirements. See individual department/program sections for departmental admission requirements.

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. Students who have taken BIOL 100 and BIOL 102, have earned an A or B in both courses, and have decided to major in a biological science should consult a UBP advisor to request permission to substitute BIOL 100 and BIOL 102 for BIOL 150.

Admission to the Major

Admission Requirements
Course Requirements
Admission course requirements for Biochemistry, Biology, and Human Biology (18)
Biology Orientation Seminar. Satisfied by:
BIOL 105 Biology Orientation Seminar 1
Principles of Molecular and Cellular Biology. Satisfied by one of the following:
BIOL 150 Principles of Molecular and Cellular Biology 4
or BIOL 151 Principles of Molecular and Cellular Biology, Honors
Principles of Organismal Biology. Satisfied by one of the following:
BIOL 152 Principles of Organismal Biology 4
or BIOL 153 Principles of Organismal Biology, Honors
Chemistry II. Satisfied by one of the following:
CHEM 135 General Chemistry II 5
or CHEM 175 Chemistry for the Chemical Sciences II
or CHEM 195 Foundations of Chemistry II, Honors
Principles of Genetics. Satisfied by one of the following:
BIOL 350 Principles of Genetics 4
or BIOL 360 Principles of Genetics, Honors

Admission course requirements for Microbiology (14)
Biology Orientation Seminar. Satisfied by:
BIOL 105 Biology Orientation Seminar 1
Principles of Molecular and Cellular Biology. Satisfied by one of the following:
BIOL 150 Principles of Molecular and Cellular Biology 4
or BIOL 151 Principles of Molecular and Cellular Biology, Honors
Chemistry II. Satisfied by one of the following:
CHEM 135 General Chemistry II 5
or CHEM 175 Chemistry for the Chemical Sciences II
or CHEM 195 Foundations of Chemistry II, Honors
Principles of Genetics. Satisfied by one of the following:
BIOL 350 Principles of Genetics 4
or BIOL 360 Principles of Genetics, Honors

Admission course requirements for Molecular Biosciences (Edwards campus) (17)
Principles of Molecular and Cellular Biology. Satisfied by one of the following:
BIOL 150 Principles of Molecular and Cellular Biology 4
or BIOL 151 Principles of Molecular and Cellular Biology, Honors
Principles of Organismal Biology. Satisfied by one of the following:
BIOL 152 Principles of Organismal Biology 4
or BIOL 153 Principles of Organismal Biology, Honors
Chemistry II. Satisfied by one of the following:
CHEM 135 General Chemistry II 5
or CHEM 175 Chemistry for the Chemical Sciences II
or CHEM 195 Foundations of Chemistry II, Honors
Principles of Genetics. Satisfied by one of the following:
BIOL 350 Principles of Genetics 4
or BIOL 360 Principles of Genetics, Honors

Biochemistry, Biology, Human Biology, and Molecular Biosciences Admission GPA
Must have a grade-point average of at least 2.2 based on grades in BIOL 150, BIOL 152, CHEM 135, and BIOL 350 (or equivalents). KU’s course repeat policy applies to grade-point average calculation.

Microbiology Admission GPA
Must have a grade-point average of at least 2.2 based on grades in BIOL 150, CHEM 135, and BIOL 350 (or equivalents). Microbiology admission requirements differ from those for Biochemistry, Biology, Human Biology, and Molecular Biosciences, because BIOL 152 is not
required for the B.A. and B.S. degrees in microbiology. KU's course repeat policy applies to grade-point average calculation.

**Application Term**

Application to the major should occur in the term in which admission requirements will be completed. If the student does not meet established admission grade-point average criteria or neglects to apply for admission in this term, she or he must petition the Undergraduate Biology Program for permission for late application. The Undergraduate Biology Program, as part of an approved petition, determines late admission requirements (including grade-point average and course requirements) and the final deadline for admission.

**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, human biology, and microbiology. 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 Microbiology**

Course work allows students to study microbiology as part of their general education and provides a background for teachers. It also prepares students for work in medical, public health, research, and industrial laboratories; for graduate, medical, or dental school; or for the clinical laboratory sciences program.

For general requirements for the B.A. degree, see CLAS General Education Degree Requirements on the College of Liberal Arts and Sciences Degree Requirements (http://catalog.ku.edu/liberal-arts-sciences) page.

**General Science Requirements**

**Microbiology General Science Requirements (39-42)**

<table>
<thead>
<tr>
<th>Course ID</th>
<th>Course Name</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 130</td>
<td>General Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM 190</td>
<td>Foundations of Chemistry I, Honors</td>
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</table>

**Microbiology Electives and Laboratory Requirements (15)**

<table>
<thead>
<tr>
<th>Course ID</th>
<th>Course Name</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>BIOL 518</td>
<td>Microbial Genetics</td>
<td></td>
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<tr>
<td>BIOL 519</td>
<td>Microbial Genetics Laboratory</td>
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**Microbiology Core Knowledge & Skills (6)**

<table>
<thead>
<tr>
<th>Course ID</th>
<th>Course Name</th>
<th>Notes</th>
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<tbody>
<tr>
<td>BIOL 105</td>
<td>Biology Orientation Seminar</td>
<td></td>
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<tr>
<td>BIOL 150</td>
<td>Principles of Molecular and Cellular Biology</td>
<td></td>
</tr>
<tr>
<td>BIO 350</td>
<td>Principles of Genetics</td>
<td></td>
</tr>
<tr>
<td>BIOL 150</td>
<td>Principles of Molecular &amp; Cellular Biology</td>
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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 a 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 Microbiology. 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.

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Hours Spring</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ENGL 101 (Goal 2.1 (2 crs req), BA Writing I)</td>
<td>3 ENGL 102 (Goal 1.2 (2 crs req), BA Writing II)</td>
<td>3</td>
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<tr>
<td>MATH 115 (Goal 1.2 Quantitative Reasoning, BA Quant Req, General Science Req)</td>
<td>3 MATH 116 (General Science Requirement)</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 130 (Goal 3 Natural Science, General Science Requirement)</td>
<td>5 CHEM 135 (General Science Requirement)</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 150 or 151 (BA Lab Science, Major Requirement)</td>
<td>4 COMS 130 (Goal 2.2 Communication)</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 105 (Major Requirement)</td>
<td>1 Goal 1.1 Critical Thinking</td>
<td>3</td>
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<thead>
<tr>
<th>Sophomore</th>
<th>Hours Spring</th>
<th>Hours</th>
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<tbody>
<tr>
<td>1st Semester Language (BA Second Language)</td>
<td>5 2nd Semester Language (BA Second Language)</td>
<td>5</td>
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<tr>
<td>BIOL 400 or 401 (Major Requirement)</td>
<td>3 Goal 3 Social Science</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 402 (Major Requirement)</td>
<td>2 BIOL 350 (Major Requirement)</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 310 or 330 (General Science Requirement)</td>
<td>3 PHSX 114 (or PHSX 211 &amp; 216)</td>
<td>4</td>
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<tr>
<td>CHEM 331 (General Science Requirement)</td>
<td>2</td>
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<td><strong>16</strong></td>
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<tr>
<th>Junior</th>
<th>Hours Spring</th>
<th>Hours</th>
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<tbody>
<tr>
<td>3rd Semester Language (BA Second Language)</td>
<td>3 4th Semester Language, or 1st semester of Another Language (BA Second Language)</td>
<td>3-5</td>
</tr>
<tr>
<td>BIOL 600 (Major Requirement)</td>
<td>3 Goal 4.1 U.S. Diversity</td>
<td>3</td>
</tr>
<tr>
<td><strong>15</strong></td>
<td><strong>14-16</strong></td>
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</table>

**Senior**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Hours Spring</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Goal 4.2 Global Awareness</td>
<td>3 Goal 3 Humanities</td>
<td>3</td>
</tr>
<tr>
<td>Microbiology Elective 400+ (Major Requirement)</td>
<td>3 Microbiology Lab Elective 400+ (Major Requirement)</td>
<td>2</td>
</tr>
<tr>
<td>Microbiology Lab Elective 400+ (Major Requirement)</td>
<td>2 Elective or possible minor course 300+ (Total Hours)</td>
<td>3</td>
</tr>
<tr>
<td><strong>15</strong></td>
<td><strong>13</strong></td>
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</tr>
</tbody>
</table>

**Total Hours: 120-122**

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 a MATH 101 or 104 equivalent course. MATH 121/MATH 125 can be taken instead of MATH 115 and MATH 116 to fulfill the Math requirement.

3. MATH 115 eligibility is required for enrollment.

4. Concurrent or prior enrollment in CHEM 130 is required.

5. CHEM 135 and BIOL 506, 507, 512, and BIOL 513 are offered only in the spring.

6. BIOL 400/401, 402, 503, 504, 518, 519, and 600 are offered only in the fall.

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

8. 15 hours of Microbiology courses, including 3 lecture-lab pairings, selected from BIOL 503, 504, 506, 507, 512, 513, 518, and 519.

9. 3 hours of BIOL course(s) 400+ selected in consultation with a Microbiology advisor.

10. A total of 3 credit hours in Goal 6 approved courses is needed 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.

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

Please note:
All students in the College of Liberal Arts and Sciences are required to completed 120 total hours of which 45 hours must be at the Jr/Sr (300+) level, and 100 hours must be from within the College of Liberal Arts and Sciences.

The same course cannot be used to fulfill more than one KU Core Goal.

**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 3.25 overall and 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.