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.

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.

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.

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)

Bachelor of Arts in Microbiology

Biology Orientation Seminar. Satisfied by:
BIOL 105 Biology Orientation Seminar 1

Principles of Molecular & Cellular Biology. Satisfied by one of the following:
BIOL 150 Principles of Molecular and Cellular Biology
BIOL 151 Principles of Molecular and Cellular Biology, Honors

Principles of Genetics. Satisfied by one of the following:
BIOL 350 Principles of Genetics
BIOL 360 Principles of Genetics, Honors

Introductory Biochemistry. Satisfied by:
BIOL 600 Introductory Biochemistry, Lectures 3

Chemistry I. Satisfied by one of the following:
CHEM 130 General Chemistry I 5
CHEM 190 Foundations of Chemistry I, Honors 5

Chemistry II. Satisfied by one of the following:
CHEM 135 General Chemistry II 5
CHEM 195 Foundations of Chemistry II, Honors 5

Organic Chemistry I. Satisfied by one of the following:
CHEM 310 Fundamentals of Organic Chemistry 3
CHEM 330 Organic Chemistry I

Organic Chemistry I Laboratory. Satisfied by:
CHEM 331 Organic Chemistry I Laboratory 2

Calculus. Satisfied by one of the following:
MATH 115 Calculus I 4
MATH 116 and Calculus II 4
MATH 125 Calculus I 5
MATH 145 Calculus I, Honors 5

Physics I. Satisfied by one of the following:
PHSX 114 College Physics I 4
PHSX 211 General Physics I
PHSX 213 General Physics I Honors

Physics II. Satisfied by one of the following:
PHSX 115 College Physics II 4
PHSX 212 General Physics II
PHSX 214 General Physics II Honors

Microbiology Core Knowledge & Skills (6-7)
Fundamentals of Microbiology. Satisfied by one of the following:
BIOL 400 Fundamentals of Microbiology 3
BIOL 401 Fundamentals of Microbiology, Honors 4

Fundamentals of Microbiology Laboratory. Satisfied by:
BIOL 402 Fundamentals of Microbiology Laboratory 2

Senior Seminar: Current Progress in Microbiology. Satisfied by:
BIOL 599 Senior Seminar: _____ (Current Progress in Microbiology. Must be taken in senior year.) 1

Microbiology Electives and Laboratory Requirements (15)
Satisfied by completing 15 hours of microbiology courses, including 3 lecture-lab pairings, selected from the following:
BIOL 503 Immunology
BIOL 504 Immunology Laboratory
BIOL 506 Bacterial Infectious Diseases
Bachelor of Arts in Microbiology

BIOL 507  Bacterial Infectious Diseases Laboratory
BIOL 512  General Virology
BIOL 513  Virology Laboratory
BIOL 518  Microbial Genetics
BIOL 519  Microbial Genetics Laboratory

Microbiology Elective (3)
Satisfied by completing 3 additional hours of BIOL courses numbered 300+ or higher; to be selected in consultation with a microbiology advisor.

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 24-25 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 12 hours from 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.

Freshman

Fall
Hours
Spring
Hours
ENGL 101 (Goal 2.1 (2 crs req), BA Writing I)¹ 3
3 ENGL 102 (Goal 1.2 (2 crs req), BA Writing II)
MATH 115 (Goal 1.2 Quantitative Reasoning, BA Quant Req, General Science Req)² 3
3 MATH 116 (General Science Requirement)
CHEM 130 (Goal 3 Natural Science, General Science Requirement)³ 5
5 CHEM 135 (General Science Requirement)⁵
BIOL 150 or 151 (BA Lab Science, General Science Requirement)⁴ 3
3 BIOL 105 (General Science Requirement)⁷
BIOL 400 or 401 (Major Requirement)⁶ 3
1 Elective (Total Hours)

16

17

Sophomore

Fall
Hours
Spring
Hours
1st Semester Language (BA Second Language) 5
2nd Semester Language (BA Second Language) 5
BIOL 400 or 401 (Major Requirement)⁶ 3
3 Goal 3 Social Science

BIOL 402 (Major Requirement)⁶ 2
2 BIOL 350 (General Science Requirement)
CHEM 310 or 330 (General Science Requirement)⁷ 3
3 PHSX 114 (or PHSX 211 & 216 (Goal 1.1 Critical Thinking, General Science Requirement))
CHEM 331 (General Science Requirement) 2

15-16

16-17

Junior

Fall
Hours
Spring
Hours
3rd Semester Language (BA Second Language) 3
4th Semester Language, or 1st semester of Another Language (BA Second Language)

BIOL 600 (General Science Requirement)⁵ 3
3 Goal 4.1 U.S. Diversity
PHSX 115 (or PHSX 212 & 236 (General Science Requirement)) 4
4 Microbiology Elective 400+ (Major Requirement)⁵ 6, 8
Microbiology Elective 400+ (Major Requirement)⁵ 6, 8
3 Microbiology Lab Elective 400+ (Major Requirement)⁵ 6, 8
Microbiology Lab Elective 400+ (Major Requirement)⁵ 2
2 Elective or possible minor course 300+ (Total Hours)

15

14-16

Senior

Fall
Hours
Spring
Hours
Goal 4.2 Global Awareness 3
3 Goal 3 Humanities
Microbiology Elective 400+ (Major Requirement)⁵ 6, 8
3 Goal 5 Social Responsibility & Ethics
Microbiology Lab Elective 400+ (Major Requirement)⁵ 6, 8
2 BIOL 599 (Major Requirement, Goal 6)¹⁰ 1
BIOL Elective 400+ (Major Requirement)⁹ 3
3 Elective or possible minor course 300+ (Total Hours)
Elective or possible minor course (Total Hours) 3
3 Elective or possible minor course 300+ (Total Hours)

14

13

Total Hours: 120-124

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 MATH 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 BIOL 135 and BIOL 506, BIOL 507, BIOL 512, and BIOL 513 are offered only in the spring.
⁶ BIOL 400/BIOL 401, BIOL 402, BIOL 503, BIOL 504, BIOL 518, BIOL 519, and BIOL 600 are offered only in the fall.
⁷ BIOL 506, BIOL 507, BIOL 512, and BIOL 513 are offered only in the spring.
⁸ BIOL 518, BIOL 519, and BIOL 600 are offered only in the fall.
⁹ BIOL 519, and BIOL 600 are offered only in the fall.
¹⁰ BIOL 519, and BIOL 600 are offered only in the fall.
Most medical schools require the full CHEM 330, CHEM 331, CHEM 335, and CHEM 336 sequence.

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

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

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.

* 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:

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.

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.