Bachelor of Science in Molecular Biosciences

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) |
|-----------------------------|---------------|
| BIOL 105 Biology Orientation Seminar. Satisfied by: |
| BIOL 105 Principles of Molecular and Cellular Biology. Satisfied by one of the following: |

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

| BIOL 150 Principles of Molecular and Cellular Biology |
| BIOL 151 Principles of Molecular and Cellular Biology, Honors |
| BIOL 152 Principles of Organismal Biology |
| BIOL 153 Principles of Organismal Biology, Honors |
| CHEM 135 General Chemistry II |
| CHEM 175 Chemistry for the Chemical Sciences II |
| CHEM 195 Foundations of Chemistry II, Honors |
| BIOL 350 Principles of Genetics |
| BIOL 360 Principles of Genetics, Honors |
| BIOL 150 Principles of Molecular and Cellular Biology, Honors |
| BIOL 151 Principles of Molecular and Cellular Biology, Honors |
| BIOL 152 Principles of Organismal Biology |
| BIOL 153 Principles of Organismal Biology, Honors |
| CHEM 135 General Chemistry II |
| CHEM 175 Chemistry for the Chemical Sciences II |
| CHEM 195 Foundations of Chemistry II, Honors |
| BIOL 350 Principles of Genetics |
| BIOL 360 Principles of Genetics, Honors |
| BIOL 150 Principles of Molecular and Cellular Biology |
| BIOL 151 Principles of Molecular and Cellular Biology, Honors |
| BIOL 152 Principles of Organismal Biology |
| BIOL 153 Principles of Organismal Biology, Honors |
| CHEM 135 General Chemistry II |
| CHEM 175 Chemistry for the Chemical Sciences II |
| CHEM 195 Foundations of Chemistry II, Honors |
| BIOL 350 Principles of Genetics |
| BIOL 360 Principles of Genetics, Honors |
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.

**Molecular Biosciences**

**KU Edwards Campus**

The undergraduate program in molecular biosciences is offered in its entirety only at the KU Edwards Campus (http://edwardscampus.ku.edu), 12600 Quivira Rd., Overland Park, KS 66213. This program is designed for students who have earned an associate's degree or equivalent hours and wish to complete the upper-level courses necessary for a bachelor's degree.

**Requirements for the B.S. Degree in Molecular Biosciences**

The program offers students a strong background in genetics, microbiology, cell biology, and biochemistry, as well as laboratory skills in genetics and microbiology. Graduates have entered medical school, dental school, and graduate school with high success rates. Contact the CLAS undergraduate advisor on the Edwards Campus, Dan Mueller, dmuelle@ku.edu, 864-8659 (from Lawrence) or 913-897-8659 (outside of Lawrence) for more information.

**General Education Requirements**

In addition to degree and major requirements, all students must complete the KU Core.

**General Science Requirements (33-36)**

Majors must complete the following general science requirements that serve as foundational courses for this major.

- **Chemistry I. Satisfied by one of the following:**
  - CHEM 130 General Chemistry I
  - CHEM 190 Foundations of Chemistry I, Honors
- **Chemistry II. Satisfied by one of the following:**
  - CHEM 135 General Chemistry II
  - CHEM 195 Foundations of Chemistry II, Honors
- **Organic Chemistry I. Satisfied by one of the following:**
  - CHEM 330 Organic Chemistry I
  - CHEM 380 Organic Chemistry I, Honors
- **Organic Chemistry I Laboratory. Satisfied by:**
  - CHEM 331 Organic Chemistry I Laboratory
- **Organic Chemistry II. Satisfied by one of the following:**
  - CHEM 335 Organic Chemistry II
  - CHEM 385 Organic Chemistry II, Honors
- **Calculus. Satisfied by one of the following:**
  - MATH 115 Calculus I
  - & MATH 116 and Calculus II

- **Physics. Satisfied by one of the following:**
  - MATH 125 Calculus I (Calculus I)

- **Option 1: College Physics**
  - PHSX 114 College Physics I & PHSX 115 and College Physics II
- **Option 2: General Physics**
  - PHSX 211 General Physics I & PHSX 216 and General Physics I Laboratory
  - PHSX 212 General Physics II & PHSX 236 and General Physics II Laboratory

- **Statistics. Satisfied by one of the following:**
  - BIOL 570 Introduction to Biostatistics
  - or MATH 365 Elementary Statistics
  - or PSYC 210 Statistics in Psychological Research

**Molecular Biosciences Course Requirements (30)**

- **Molecular & Cellular Biology. Satisfied by:**
  - BIOL 150 Principles of Molecular and Cellular Biology
  - or BIOL 151 Principles of Molecular and Cellular Biology, Honors
  - Principles of Organismal Biology. Satisfied by:
  - BIOL 152 Principles of Organismal Biology
  - or BIOL 153 Principles of Organismal Biology, Honors
  - Principles of Genetics. Satisfied by:
  - BIOL 350 Principles of Genetics
  - or BIOL 360 Principles of Genetics, Honors

- **Fundamentals of Microbiology. Satisfied by:**
  - BIOL 400 Fundamentals of Microbiology
  - or BIOL 401 Fundamentals of Microbiology, Honors

- **Molecular Biology Laboratory. Satisfied by:**
  - BIOL 402 Fundamentals of Microbiology Laboratory
  - Laboratory in Genetics. Satisfied by:
  - BIOL 405 Laboratory in Genetics
  - Cell Structure & Function. Satisfied by:
  - BIOL 416 Cell Structure and Function
  - or BIOL 536 Cell Structure and Function (Honors)

- **Introductory Biochemistry. Satisfied by:**
  - BIOL 430 Laboratory in Molecular Biology
  - Principles of Biochemistry Laboratory. Satisfied by:
  - BIOL 600 Introductory Biochemistry, Lectures
  - Principles of Biochemistry Laboratory. Satisfied by:
  - BIOL 601 Principles of Biochemistry Laboratory

- **Senior Seminar in Molecular Biosciences (1)**
  - Satisfied by:
  - BIOL 599 Senior Seminar: _____ (Must be taken in senior year. Offered only at the Edwards Campus.)

- **Molecular Bioscience Required Electives (12)**
  - Satisfied by completing 12 hours of BIOL courses numbered 400 or higher, including at least 2 hours of a seminar/topics course (BIOL 419, BIOL 420, BIOL 421, BIOL 701). No more than 3 hours of BIOL 423 Non-Lab Independent Study and/or BIOL 424 Independent Study (combined) can be applied towards the elective requirement. Seminar. Satisfied by completing at least 2 hours of the following seminar or topics courses:
  - BIOL 419 Topics in: _____
  - BIOL 421 Topics in Molecular Biosciences: _____
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 46 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 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).

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.