BACHELOR OF ARTS IN HUMAN BIOLOGY

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.

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 Human Biology
The curriculum builds from a broad background of general science courses and adds depth in a set of 5 specialized disciplines. Courses in the disciplines emphasize topics related to humans and provide a solid understanding of each field of knowledge.

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

Students must choose 1 concentration from the 5 areas:

- Anthropology
- Applied behavioral science
- Biology
- Psychology
- Speech-language-hearing

General Science Requirements (34)
Majors must complete the following 34-hour minimum of general science requirements that serve as foundational courses for this major.

<table>
<thead>
<tr>
<th>Course</th>
<th>Satisfactory by</th>
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<tbody>
<tr>
<td>Introduction to Human Evolutionary Biology</td>
<td>ANTH 345 Introduction to Human Evolutionary Biology</td>
</tr>
<tr>
<td>Biology Orientation Seminar</td>
<td>BIOL 105 Biology Orientation Seminar</td>
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<tr>
<td>Principles of Molecular &amp; Cellular Biology</td>
<td>BIOL 150 Principles of Molecular and Cellular Biology</td>
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<td></td>
<td>BIOL 151 Principles of Molecular and Cellular Biology, Honors</td>
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<tr>
<td>Principles of Organismal Biology</td>
<td>BIOL 152 Principles of Organismal Biology</td>
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<td></td>
<td>BIOL 153 Principles of Organismal Biology, Honors</td>
</tr>
<tr>
<td>Calculus</td>
<td>MATH 115 Calculus I</td>
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<tr>
<td></td>
<td>&amp; MATH 116 and Calculus II</td>
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<tr>
<td></td>
<td>MATH 125 Calculus I</td>
</tr>
<tr>
<td></td>
<td>MATH 145 Calculus I, Honors</td>
</tr>
<tr>
<td>Chemistry I.</td>
<td>CHEM 130 General Chemistry I</td>
</tr>
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<td>CHEM 190 Foundations of Chemistry I, Honors</td>
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<tr>
<td>Chemistry II.</td>
<td>CHEM 135 General Chemistry II</td>
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<tr>
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<td>CHEM 195 Foundations of Chemistry II, Honors</td>
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<tr>
<td>Physics I.</td>
<td>PHSX 114 College Physics I</td>
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<td></td>
<td>PHSX 211 General Physics I</td>
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<tr>
<td></td>
<td>&amp; PHSX 216 General Physics I Laboratory</td>
</tr>
<tr>
<td>Statistics</td>
<td>BIOL 570 Introduction to Biostatistics (Recommended for the Anthropology and Biology Concentrations)</td>
</tr>
<tr>
<td></td>
<td>PSYC 210 Statistics in Psychological Research (Recommended for the Psychology Concentration)</td>
</tr>
</tbody>
</table>
**Anthropology**

**Anthropology Concentration (13)**

Majors must complete the following 31 hours. These additional science courses are included in the Human Biology-Anthropology major hours and GPA calculations.

Organic Chemistry I. Satisfied by one of the following: 3

- CHEM 310 Fundamentals of Organic Chemistry
- CHEM 330 Organic Chemistry I

Organic Chemistry I Laboratory. Satisfied by: 2

- CHEM 331 Organic Chemistry I Laboratory

Cell Structure & Function. Satisfied by one of the following: 3

- BIOL 416 Cell Structure and Function
- BIOL 536 Cell Structure and Function (Honors)

Principles of Genetics. Satisfied by one of the following: 4

- BIOL 350 Principles of Genetics
- BIOL 360 Principles of Genetics, Honors

Senior Seminar in Human Biology. Satisfied by: 1

- BIOL 599 Senior Seminar: _____ (Must be taken in senior year)

**Anthropology Concentration Categories (18-21)**

Satisfied by completing 2 of the following 4 categories (18-21 hours required):

**Category 1: Human Anatomy and Physiology**

- BIOL 417 Biology of Development

Anatomy and Physiology. Satisfied by completing 9 hours from the following:

- ANTH 542 Biology of Human Nutrition
- ANTH 648 Human Osteology
- ANTH 650 Human Reproduction: Biology and Behavior
- BIOL 426 Laboratory in Cell Biology
- BIOL 440 Advanced Human Anatomy
- BIOL 600 Introductory Biochemistry, Lectures
- BIOL 637 Introductory Biochemistry Laboratory
- BIOL 646 Mammalian Physiology
- BIOL 647 Mammalian Physiology Laboratory

**Category 2: Human Population Biology**

Satisfied by completing 9 hours from the following:

- ANTH 340 Human Variation and Evolution
- ANTH 442 Anthropological Genetics
- ANTH 544 Origins of Native Americans
- ANTH 545 Contemporary Health Issues in Africa
- ANTH 652 Population Dynamics

**Category 3: Human Adaptation and Evolution**

Satisfied by completing 9 hours from the following:

- ANTH 350 Human Adaptation
- ANTH 352 Controversies on the Living and the Dead
- ANTH 503 Topics in Biological Anthropology: _____
- ANTH 555 Evolution of Human Diseases

**Category 4: Human Biology and Behavior**

Satisfied by completing 9 hours from the following:

- ANTH 359 Anthropology of Sex
- ANTH 447 Human Behavioral Genetics
- ANTH 461 Introduction to Medical Anthropology
- ANTH 754 Biological Bases of Human Behavior
- PSYC 370 Behavioral Neuroscience
- PSYC 536 The Psychology of Language

**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 31 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 field of study including F’s and repeated courses. See the Semester/ Cumulative GPA Calculator (http://clas.ku.edu/undergrad/tools/gpa).

**Applied Behavioral Science**

**Applied Behavioral Science Concentration (15)**

Majors must complete the following 33 hours. These additional science courses are included in the Human Biology-Applied Behavioral Science major hours and GPA calculations.

Principles of Genetics. Satisfied by one of the following: 4

- BIOL 350 Principles of Genetics
- BIOL 360 Principles of Genetics, Honors

Introduction to Applied Behavioral Science. Satisfied by:

- ABSC 100 Introduction to Applied Behavioral Science
- ABSC 160 Introduction to Child Behavior and Development
- PSYC 333 Child Development

Research Methods & Application. Satisfied by:

- ABSC 308 Research Methods and Application
- BIOL 599 Senior Seminar: _____ (Must be taken in senior year)

**Applied Behavioral Science Concentration Categories (18-19)**

Satisfied by completing 2 of the following 4 categories (18-19 hours required):

**Category 1: Applied Behavioral Science**

- ANTH 549 Human Paleontology: Fossil Apes to Australopithecus
- ANTH 550 Human Paleontology: Homo Erectus to Homo Sapiens

**Category 2: Applied Behavioral Science**

- ANTH 359 Anthropology of Sex
- ANTH 447 Human Behavioral Genetics
- ANTH 461 Introduction to Medical Anthropology
- ANTH 754 Biological Bases of Human Behavior
- PSYC 370 Behavioral Neuroscience
- PSYC 536 The Psychology of Language
ABSC 304  The Principles and Procedures of Behavior Modification and Therapy

Applied Behavioral Science. Satisfied by completing 6 hours selected from the following courses:

- ABSC 150  Community Leadership
- ABSC 310  Building Healthy Communities
  or ABSC 311 Building Healthy Communities, Honors
- ABSC 350  The Behavioral Treatment of Children with Autism
- ABSC 410  Behavioral Approaches in Working with Adolescents
- ABSC 437  Independent Living and People with Disabilities

Category 2: Development: Typical and Atypical
Child Behavior and Development. Satisfied by:

- ABSC 632  Advanced Child Behavior and Development

Development: Typical and Atypical. Satisfied by completing 6 hours selected from the following:

- ABSC 535  Developmental Psychopathology
- ABSC 565  Applied Developmental Psychology
- BIOL 417  Biology of Development

Category 3: Biology of Behavior
Physiology of Organisms. Satisfied by:

- BIOL 408  Physiology of Organisms

Biology of Behavior. Satisfied by completing 6 hours selected from the following:

- ANTH 542  Biology of Human Nutrition
- BIOL 435  Introduction to Neurobiology
- BIOL 440  Advanced Human Anatomy
- BIOL 454  Brain Diseases and Neurological Disorders
- BIOL 646  Mammalian Physiology
- BIOL 647  Mammalian Physiology Laboratory
- BIOL 655  Behavioral Genetics
- PSYC 370  Behavioral Neuroscience
- PSYC 380  Clinical Neuroscience

Category 4: Evolution, Culture, and Behavior
Evolutionary Biology. Satisfied by:

- BIOL 412  Evolutionary Biology

Evolution, Culture, and Behavior. Satisfied by completing 6 hours selected from the following:

- ANTH 341  Human Evolution
- ANTH 415  The Rise of Civilization
- ANTH 650  Human Reproduction: Biology and Behavior
- ANTH 661  Cultural Dynamics
- BIOL/GEOG 410  Human Biogeography, Honors
- BIOL 428  Introduction to Systematics
- BIOL 625  Behavioral Ecology and Sociobiology
- BIOL 652  Comparative Animal Behavior

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 33 hours of major courses.

**Biology**
Biology Concentration (14)
Majors must complete the following 32 hours. These additional science courses are included in the Human Biology-Biology major hours and GPA calculations.

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

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

Physics II. Satisfied by one of the following: 4
- PHSX 115  College Physics II
- PHSX 212  General Physics II
  & PHSX 236  General Physics II Laboratory

Principles of Genetics. Satisfied by one of the following: 4
- BIOL 350  Principles of Genetics
- BIOL 360  Principles of Genetics, Honors
- BIOL 599  Senior Seminar in Human Biology. Satisfied by:
  Senior Seminar: _____ (Must be taken in senior year.)

Biology Laboratory Electives. Course selections from the following categories must include at least 3 hours of laboratory credit, 400 level or above.

**Biology Concentration Categories (18-20)**
Satisfied by completing 2 of the following 4 categories listed below. 18-20
(18-20 hours required) (Course selections must include at least 3 hours of laboratory credit, 400 level or above.)

**Category 1: Development and Genetics**

- BIOL 417  Biology of Development

Development and Genetics. Satisfied by completing 6 hours from the following:

- ABSC/PSYC 535  Developmental Psychopathology
- ANTH 762  Human Growth and Development
- BIOL 405  Laboratory in Genetics
- BIOL 416  Cell Structure and Function
  or BIOL 536  Cell Structure and Function (Honors)
- BIOL 595  Human Genetics
- BIOL 655  Behavioral Genetics
- BIOL 688  The Molecular Biology of Cancer
- PSYC 333  Child Development
- PSYC 430  Cognitive Development
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>PSYC 531</td>
<td>Language Development</td>
</tr>
<tr>
<td>SPLH 566</td>
<td>Language Development</td>
</tr>
</tbody>
</table>

**Anatomy and Physiology**

Mammalian Physiology. Satisfied by:

- BIOL 646  Mammalian Physiology

Anatomy & Physiology. Satisfied by completing 6 hours from the following:

- ANTH 542  Biology of Human Nutrition
- ANTH 648  Human Osteology
- BIOL 435  Introduction to Neurobiology
- BIOL 440  Advanced Human Anatomy
- BIOL 600  Introductory Biochemistry, Lectures
- BIOL 637  Introductory Biochemistry Laboratory
- BIOL 647  Mammalian Physiology Laboratory
- PSYC 370  Behavioral Neuroscience
- PSYC 375  Cognitive Neuroscience
- PSYC 380  Clinical Neuroscience

**Category 3: Evolution, Ecology, and Adaptation**

Evolutionary Biology. Satisfied by:

- BIOL 412  Evolutionary Biology

Evolution, Ecology, and Adaptation. Satisfied by completing 6 hours selected from the following:

- ANTH 340  Human Variation and Evolution
- ANTH 341  Human Evolution
- ANTH 350  Human Adaptation
- ANTH 652  Population Dynamics
- BIOL 410  Human Biogeography, Honors
- BIOL 414  Principles of Ecology
- BIOL 668  Evolutionary Ecology
- PSYC 555  Evolutionary Psychology

**Category 4: Human Disease**

Fundamentals of Microbiology. Satisfied by one of the following:

- BIOL 400  Fundamentals of Microbiology
- BIOL 401  Fundamentals of Microbiology, Honors

Human Disease. Satisfied by completing 6 hours selected from the following:

- ANTH 555  Evolution of Human Diseases
- BIOL 402  Fundamentals of Microbiology Laboratory
- BIOL 503  Immunology
- BIOL 504  Immunology Laboratory
- BIOL 506  Bacterial Infectious Diseases
- BIOL 507  Bacterial Infectious Diseases Laboratory
- BIOL 512  General Virology
- BIOL 513  Virology Laboratory
- BIOL 518  Microbial Genetics
- BIOL 519  Microbial Genetics Laboratory
- BIOL 595  Human Genetics
- BIOL 616  Medical Entomology
- BIOL 688  The Molecular Biology of Cancer

**Psychology Concentration (13)**

- Majors must complete the following 31 hours. These additional science courses are included in the Human Biology-Psychology major hours and GPA calculations.
- Organic Chemistry I. Satisfied by one of the following: 3
  - CHEM 310  Fundamentals of Organic Chemistry
  - CHEM 330  Organic Chemistry I
- Organic Chemistry I Laboratory. Satisfied by: 2
  - CHEM 331  Organic Chemistry I Laboratory
- Principles of Genetics. Satisfied by one of the following: 4
  - BIOL 350  Principles of Genetics
  - BIOL 360  Principles of Genetics, Honors
- Research Methods. Satisfied by: 3
  - PSYC 200  Research Methods in Psychology
- Senior Seminar in Human Biology. Satisfied by: 1
  - BIOL 599  Senior Seminar: ____ (Must be taken in senior year.)

**Psychology Concentration Categories (18)**

Satisfied by completing 2 of the following 4 categories listed below. 18 hours required:

- Category 1: Evolution, Adaptation and Health
  - Satisfied by completing 9 hours selected from the following:
    - PSYC 555  Evolutionary Psychology
    - PSYC 605  Health Psychology
    - ANTH 340  Human Variation and Evolution
    - ANTH 341  Human Evolution
    - ANTH 350  Human Adaptation
    - ANTH 442  Anthropological Genetics
    - ANTH 447  Human Behavioral Genetics
    - ANTH 542  Biology of Human Nutrition
    - ANTH 555  Evolution of Human Diseases
    - BIOL 412  Evolutionary Biology
    - BIOL 595  Human Genetics

- Category 2: Human Development
  - Child Development. Satisfied by:
PSYC 333  Child Development  
PSYC 334  Child Development, Honors  
Human Development. Satisfied by completing 6 hours selected from the following:  
PSYC 430  Cognitive Development  
PSYC/ABSC 535  Developmental Psychopathology  
PSYC/ABSC 632  Advanced Child Behavior and Development  
BIOL 417  Biology of Development  
Category 3: Human Cognition and Language  
Cognitive Psychology. Satisfied by:  
PSYC 318  Cognitive Psychology  
Human Cognition & Language. Satisfied by completing 6 hours selected from the following:  
PSYC 418  Introduction to Cognitive Science  
PSYC 482  Sensation and Perception  
PSYC 518  Human Memory  
PSYC 531  Language Development  
PSYC 536  The Psychology of Language  
SPLH 466  Language Science  
SPLH 566  Language Development  
Category 4: Neuroscience  
Satisfied by completing 9 hours selected from the following:  
PSYC 370  Behavioral Neuroscience  
PSYC 375  Cognitive Neuroscience  
PSYC 380  Clinical Neuroscience  
ANTH 650  Human Reproduction: Biology and Behavior  
BIOL 435  Introduction to Neurobiology  
BIOL 454  Brain Diseases and Neurological Disorders  
BIOL 655  Behavioral Genetics  

**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 31 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).  

**Speech-Language-Hearing**  
**Speech-Language-Hearing Concentration (12)**  
Majors must complete the following 30 hours. These additional science courses are included in the Human Biology-Speech-Language-Hearing major hours and GPA calculations.  

Physics. Satisfied by one of the following:  
SPLH 120  The Physics of Speech  
PHSX 115  College Physics II  

Research Methods. Satisfied by:  
SPLH 660  Research Methods in Speech-Language-Hearing  

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

Senior Seminar in Human Biology. Satisfied by:  
BIOL 599  Senior Seminar: _____ (Must be taken in senior year.)  

**Speech-Language-Hearing Concentration Categories (18-19)**  
Satisfied by completing 2 of the following 4 categories (18-19 hours required).  

**Category 1: Development and Genetics**  
Biology of Development. Satisfied by:  
BIOL 417  Biology of Development  

Development and Genetics. Satisfied by completing 6 hours selected from the following:  
ANTH 762  Human Growth and Development  
BIOL 405  Laboratory in Genetics  
BIOL 416  Cell Structure and Function  
or BIOL 536  Cell Structure and Function (Honors)  
BIOL 595  Human Genetics  
BIOL 655  Behavioral Genetics  
PSYC 333  Child Development  
PSYC 430  Cognitive Development  

SPLH 464  Undergraduate Seminar in: _____ (Neural Bases of Speech & Voice)  

SPLH 464  Undergraduate Seminar in: _____ (Speech Motor Control)  

**Category 2: Anatomy and Physiology**  
Mammalian Physiology. Satisfied by:  
BIOL 646  Mammalian Physiology  

Anatomy and Physiology. Satisfied by completing 6 hours selected from the following:  
BIOL 440  Advanced Human Anatomy  
BIOL 647  Mammalian Physiology Laboratory  
SPLH 462  Principles of Speech Science  
SPLH 463  Principles of Hearing Science  

**Category 3: Neuroscience**  
Physiology of Organisms. Satisfied by:  
BIOL 408  Physiology of Organisms  

Neuroscience. Satisfied by completing 6 hours selected from the following:  
BIOL 435  Introduction to Neurobiology  
PSYC 370  Behavioral Neuroscience  
PSYC 375  Cognitive Neuroscience  
PSYC 380  Clinical Neuroscience  

SPLH 464  Undergraduate Seminar in: _____ (Neural Bases of Speech & Voice)  

SPLH 464  Undergraduate Seminar in: _____ (Speech Motor Control)
Category 4: Research Practicum

Satisfied by completing 9 hours selected from the following courses:

- SPLH 449 Laboratory/Field Work in Human Biology (various topics)
- SPLH 464 Undergraduate Seminar in: _____ (Circuit Theory & Bioinstrumentation)
- SPLH 499 Directed Study in Speech-Language-Hearing

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 30 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 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.

Specific guidelines and intent forms are available in the Undergraduate Biology Program office and online (http://www.ubku.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.

Students majoring in Human Biology with Anthropology, Applied Behavioral Science, Psychology, or Speech-Language-Hearing...