BACHELOR OF ARTS: BIOLOGY

University Requirements

General Education

UMKC Essentials is the university-wide curriculum that all undergraduate students will complete. The 30-credit hour program includes a First Year Experience course; three critical thinking courses in the areas of Arts & Humanities, Natural & Physical Sciences, and Social & Behavioral Sciences; a Culture and Diversity course; a Civic & Urban Engagement course; two courses in Written Composition and one course in Oral Communication; and a Math Pathway course. Transfer students entering UMKC will elect from the UMKC Essentials General Education Program or the Missouri Core 42 General Education Curriculum. Academic advisors will meet with incoming transfer students to determine which option best serves the student's educational needs. More information about General Education may be found here: https://catalog.umkc.edu/undergraduate-academic-regulations-information/general-education-requirements/ (http://catalog.umkc.edu/undergraduate-academic-regulations-information/general-education-requirements/)

Constitution Course

Every undergraduate student must take a course covering the United States Constitution and the Missouri State Constitution before graduation. Course options are included in the program requirements section below.

Exit Examinations

Information on exit examinations is available in the Undergraduate Academic Regulations and Information (http://catalog.umkc.edu/undergraduate-academic-regulations-information/graduation/exitexams/) section of the catalog.

Missouri Higher Education Civics Achievement Examination

In accordance with Missouri Senate Bill 807 (section 170.013.1), 'any student entering a public institution of higher education for the first time after July 2019 who is pursuing an associate's or bachelor's degree from such institution shall successfully pass an examination on the provisions and principles of American civics with a score of seventy percent or greater as a condition of graduation from such institution'. To satisfy this requirement at UMKC, students access the exam through the Canvas site. This requirement will be listed in the degree audit system as, 'Take State Mandated Missouri Higher Education Civics Achievement Examination', and listed on the transcript as 'Missouri Civics Examination'.

Student Learning Outcomes

Students graduating from this program will:

- Identify fundamental concepts in the biological sciences, including the relationship between structure and function at all levels of biological organization, evolution and the role of natural selection in the process, ecological relationships between organisms and their environment.
- Describe cellular structure and explain the major biochemical processes that occur in cells.
- Describe and explain the mechanisms of heredity and the flow of genetic information.
- Apply knowledge from other fields to biological problems.
- Evaluate scientific data.
- Write clearly about topics in the biological sciences for a peer or professional audience.

Students interested in pursuing undergraduate degree programs offered by the School of Biological and Chemical Sciences are admitted through the UMKC Office of Admissions (http://www.umkc.edu/admissions/). Transfer or Readmitted students should contact the University admissions office and the School of Biological and Chemical Sciences for information about transfer admissions and evaluation of transfer coursework. Transfer admission eligibility includes an overall grade-point average of at least 2.0 for all college-level coursework attempted at previous institutions, an overall GPA of at least 2.0 in courses used to fulfill Biological Sciences major requirements, and a University of Missouri Biology GPA of at least 2.0.

The B.A. degree program in biology is designed to accommodate students who want a solid background in the biological sciences, but who need less rigorous studies in the supporting sciences of chemistry, mathematics and physics. It is also recommended for students who plan to pursue double majors.

Program Requirements

UMKC Essentials

Code	Title	Credits
First Semester Experience Course (GEFSE)		3
Written Communication:		
ENGLISH 110	Introduction to Academic Prose	3
ENGLISH 225	English II: Intermediate Academic Prose	3
Oral Communication (choose one of the following):		3

COMM-ST 110	Fundamentals Of Effective Speaking And Listening	
COMM-ST 140	Principles Of Communication	
COMM-ST 212	Argumentation And Debate (offered via dual credit only)	
COMM-ST 277	Interpersonal Communication	
Math Pathway (satisfied in major requirements below)		
Critical Thinking in Arts & Humanities (GECRT-AH)		3
Critical Thinking in Natural & Physical Sciences (GECRT-SC)		3
Critical Thinking in Social & Behavioral Sciences (GECRT-SS)		3
Culture & Diversity Course (GECDV)		3
Civic & Urban Engagement Course (GECUE)		3
Total Credits		27

Constitution Course Requirement

Section 170.011.1 of the Missouri Revised Statutes, 2015, states that all candidates for a degree issued by a college or university in the state of Missouri must have "satisfactorily passed an examination on the provisions and principles of the Constitution of the United States and of the state of Missouri, and in American history and American institutions."

Courses at UMKC that satisfy this state requirement are:

Code	Title	Credits
Choose one of the following:		3
CJC 364	The Supreme Court And The Criminal Process	
HISTORY 101	U.S. History to 1877	
HISTORY 102	U.S. History Since 1877	
HONORS 230	Honors American Government	
POL-SCI 210	American Government	
Total Credits		3

There are a few other ways this requirement can be satisfied for students transferring to UMKC:

- Take an equivalent course from the list above at a regionally accredited institution.
- Earn credit for one of the above courses through AP, IB, or CLEP.
- Take a course that directly satisfies the Missouri Constitution Requirement at another Missouri institution.
- Have a previous bachelors degree (or higher) from a regionally accredited institution.
- Have an Associate of Arts degree from a regionally accredited institution.
- Complete the 42 Hour Core at a Missouri institution and have it listed on the official transcript.

Major Requirements

Code	Title	Credits
Biology Course Requirements		
BIOLOGY 108L & BIOLOGY 108	General Biology I Laboratory and General Biology I	4
or MOTRBIOL 100LB	MOTR Essentials in Biology w/ Lab - Botany	
or MOTRBIOL 150LB	MOTR Biology with Lab	
BIOLOGY 109L & BIOLOGY 109	General Biology II Laboratory and General Biology II	4
or MOTRBIOL 100LZ	MOTR Essentials in Biology with Lab	
or MOTRBIOL 150LZ	MOTR Biology w/Lab	
BIOLOGY 202	Cell Biology	3
BIOLOGY 206	Genetics	3
BIOLOGY 441	Biochemistry	3
Biology Laboratory Courses		
Select one of the following:		2
BIOLOGY 218L	Introductory Anatomy Laboratory	
or MOTRLIFS 100LA	MOTR Anatomy focused Essentials in Human Biology with Lab	

or MOTRLIFS 150LA	MOTR Anatomy focused Human Biology w/Lab	
BIOLOGY 302L	Ecology Laboratory	
BIOLOGY 312WL	Laboratory in Developmental Biology, Genetics and Cell Biology	
BIOLOGY 313L	Laboratory in Microbiology	
or BIOLOGY 313WL	Laboratory in Microbiology	
BIOLOGY 328L	Laboratory in Histology and Cellular Ultrastructure	
or BIOLOGY 328WL	Laboratory in Histology and Cellular Ultrastructure	
BIOLOGY 338L	Comparative Vertebrate Anatomy Laboratory	
BIOLOGY 360L	Laboratory in Biochemistry and Molecular Biology	
or BIOLOGY 360WL	Laboratory in Biochemistry and Molecular Biology	
Biology Synthesis Requirement		
Select from the following for a total of three credit hours (maximum of 4 hours of LIFE-SCI 497 and 499 can be used toward the rest of the sub-requirements):		3
BIOLOGY 498WI	Critical Analysis of Biological Issues (WI)	
LIFE-SCI 497	Directed Studies—Biological Sciences	
or LIFE-SCI 497WI	Directed Studies—Biological Sciences	
LIFE-SCI 499	Undergraduate Research-Biological Sciences	
or LIFE-SCI 499WI	Undergraduate Research-Biological Sciences	
Writing Intensive Lecture or Lab Course (may be fulfilled with lab or elective coursework above.)		
Total Credits		22

Code	Title	Credits
Additional Majors Coursework Options [1]		**17**
BIOLOGY 115	First Year Seminar	
BIOLOGY 199L	Methods in Biological Research	
BIOLOGY 201	Preparing for Careers in Biology	
or LIFE-SCI 202	Careers in Health II	
BIOLOGY 250	Careers in Biological & Chemical Sciences I	
or LIFE-SCI 201	Careers in Health I	
BIOLOGY 302	General Ecology	
BIOLOGY 303	Invertebrate Zoology	
BIOLOGY 305	Marine and Freshwater Biology	
BIOLOGY 308	Vertebrate Zoology	
BIOLOGY 314	Entomology	
BIOLOGY 319	Global Health: New and Emerging Infectious Diseases	
BIOLOGY 322	General Parasitology	
BIOLOGY 326	Biological Conservation	
BIOLOGY 327	Biogeography and Biodiversity	
BIOLOGY 328	Histology	
BIOLOGY 329	Endocrinology	
BIOLOGY 346	Plant Biology	
BIOLOGY 350	Assisting Undergraduate Learning in Biology	
BIOLOGY 385	Special Topics	
BIOLOGY 397	Experience Based Education	
BIOLOGY 405	Introduction to Evolution	
BIOLOGY 409	Developmental Biology	
BIOLOGY 442	Neurobiology	
BIOLOGY 445	Evolutionary Ecology	
Total Credits		17

[1] Students must complete additional biology majors coursework to total at least 38 credit hours of biology courses with grades of C- or better. At least 24 of these must be at the 300- or 400-level. One of these courses must be writing intensive. A minimum of 21 credit hours of biology courses must be taken from BIOLOGY or LIFE-SCI coursework at UMKC. The UM Biology GPA must be at least 2.0.

Science and Mathematics Course Requirements

The following courses must be completed with grades of C- or better:

Code	Title	Credits
CHEM 211	General Chemistry I	4
or MOTRCHEM 150	MOTR Chemistry I	
CHEM 211L	Experimental General Chemistry I	1
CHEM 212R	General Chemistry II	4
CHEM 212LR	Experimental General Chemistry II	1
CHEM 320	Elementary Organic Chemistry	4
CHEM 320L	Experimental Organic Chemistry	1
MATH 120	Precalculus (satisfies Math Pathway)	5
or MATH 110	Precalculus Algebra	
MATH 210	Calculus I	4
or BIOLOGY 304	Biostatistics 1	
or STAT 115	Statistical Reasoning	
or STAT 235	Elementary Statistics	
or MOTRMATH 110	MOTR Statistical Reasoning	
PHYSICS 210	General Physics I	4
or PHYSICS 240	Physics For Scientists and Engineers I	
Total Credits		28

Code	Title	Credits
General Electives		**24**

Minimum GPA: 2.0

Total Credit Hours: 120

Tools for Planning and Fulfilling Academic Requirements

UMKC's Major Maps are detailed, semester by semester plans that lead a student to complete all degree requirements within four years. Plans include benchmarks and critical courses by term that assist a student's evaluation of progress and major "fit". In order to ensure that the appropriate courses are taken, students are encouraged to consult with the undergraduate advisor for this major. Please see the tab above to view the major map for this program.

UMKC's Transfer Guides (https://www.umkc.edu/admissions/transfer-guides.html) provide detailed guidance on recommended transfer coursework, plans of study, transfer timelines, and transfer contact information. To ensure a seamless transfer experience, students are encouraged to work with both their community college advisor and a UMKC advisor when planning their coursework.

UMKC's PlanMyDegree 'Audit' (https://www.umkc.edu/registrar/academic-programs/plan-my-degree.html) degree audit system provides an individual evaluation of all degree requirements (General Education, Degree Specific, Major Specific, etc.) for students' officially recorded (Office of Registration and Records) and "what if" exploratory plans of study. This evaluation is used to certify all graduation requirements.

UMKC's PlanMyDegree 'Plans' (https://www.umkc.edu/registrar/academic-programs/plan-my-degree.html) degree planning tool enables students to develop a personalized semester by semester plan of study towards completion of degree requirements for student's officially recorded (Office of Registration and Records) and "what if" exploratory plans of study. Update and edit your full plan to degree completion each term and confirm accuracy each semester with your Academic Advisor(s).

Major Map

Four Year Graduation Plan - Courses & Critical Benchmarks for First Time College Students:

UMKC's Major Maps are detailed, undergraduate four-year course outlines that inform students on the classes they should take and when to take them. Outlines are updated yearly. Graduate students should visit their program's individual school for program outlines.

The following is a sample course of study. Your path to graduation may vary based on factors such as college credit you earned while in high school, transfer work from other institutions of higher learning, and placement in Mathematics. You are responsible for checking prerequisites to any courses. It is the Student's responsibility to ensure that all program requirements are met. This guide is not a substitute for academic advisement.

First Year

Fall Semester	Credits	Spring Semester	Credits
BIOLOGY 108 & 108L (or BIOLOGY 109 & 109L)[CC]	4	BIOLOGY 109 & 109L (or BIOLOGY 108 & 108L)[CC]	4
CHEM 211 & 211L (or MATH 120)[CC]	5	CHEM 212R & CHEM 212LR (or CHEM 211 & 211L)[CC]	5
GEFSE 101	3	ENGLISH 110	3
GECRT-SC 101	3	MATH 110 (or MATH 120 (5cr))	3
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
BIOLOGY 202 or 206[CC]	3	BIOLOGY 206 or 202[CC]	3
MATH 210, STAT 235, STAT 115, or BIOLOGY 304 (or CHEM 212R & CHEM 212LR if not yet completed)	4	CHEM 320 & 320L[CC]	5
BIOLOGY 250 or LIFE-SCI 201 (recommended elective)	1	COMM-ST 110, 140, or 277	3
ENGLISH 225	3	GECDV 201	3
GECRT-AH 101	3		
GECRT-SS 101	3		
	17		14

Third Year

Fall Semester	Credits	Spring Semester	Credits
BIOLOGY 441	3	BIOLOGY 3XX/4XX Major Elective	3
BIOLOGY 3XX/4XX Major Elective	3	BIOLOGY 3XX/4XX Major Elective (WI Writing Intensive course, if needed)	3
BIOLOGY Laboratory Elective	2	HISTORY 101, 102, or POL-SCI 210	3
PHYSICS 210 or 240	4	GECUE 201	3
General Elective (or MATH 210, 216, STAT 235, or 115 if not yet completed)	3	General Elective	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
BIOLOGY 3XX/4XX Major Elective	3	BIOLOGY 498WI, LIFE-SCI 497, or LIFE-SCI 499	3
BIOLOGY 3XX/4XX Major Elective	3	BIOLOGY 3XX/4XX Major Elective	2
3XX/4XX General Elective	3	General Elective (3XX/4XX if needed)	3
3XX/4XX General Elective	3	General Elective	3
General Elective	3	General Elective	3
	15		14

Total Credits: 120

CC Critical Courses provide feedback regarding major fit and help indicate likelihood of successful completion of chosen academic program and degree.

Recommendations to Maintain Progress toward 4-Year Degree Completion

- Completion of the First Semester Experience (FSE) course in first term.
- Early completion of Written Communication, Oral Communication, and Math Pathway requirements.
- Maintain the minimum GPA required for academic Good Standing for your degree program.
- Completion at least 15 credit hours toward degree each regular semester. *(Students may use the summer to ensure completion of 30 hours per academic year or to lighten Fall and Spring course loads.)*
- Enrollment in Critical Courses as listed on the Major Map is recommended in order to maintain timely progress and completion of prerequisite coursework.
- Regular consultation with Academic Advisor(s) for program(s) of study is strongly recommended and may be required for some degree programs..

Roo Advising (http://catalog.umkc.edu/roo-advising/)

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