



## Major Map: BS Biology

Emphasis: Bioinformatics

Catalog year: 2013-2014

<http://sbs.umkc.edu/>

The following is a sample course of study. It is the student's responsibility to ensure that all program requirements are met. This guide is not a substitute for academic advisement.

Your path to graduation may vary slightly 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.

Course Subject and Title	Hrs.	Upper Division	Transfer Course	Minimum Grade if Required	Date Completed	Final Grade	Pre-requisites met	Additional Critical Tracking Notes
<b>Fall Semester Year 1: 13 hours</b>								
BIOLOGY 108/108L General Biology I & Lab	3/1			C-				BIOLOGY 108 and 109 may be taken in any order.
CHEM 211/211L General Chemistry I & Lab	4/1			C-				
GER (ex. COMM-ST 110)	3			C-				
BIOLOGY 115 First Year Seminar	1			C-				
<b>Spring Semester Year 1: 15 hours</b>								
BIOLOGY 109/109L General Bio II & Lab	3/1			C-				Math Entrance Exam Is required for MATH 210, 216 or STAT 235.
CHEM 212R/212LR General Chem II & Lab	4/1			C-				
MATH 210 Calc I or MATH 216 Biomath I	3			C-				
CS 101 Problem Solving & Program I	3			C-				
<b>Summer Semester Year 1</b>								
May use summer semester to lighten fall and winter course loads.								
<b>Fall Semester Year 2: 17 hours</b>								
BIOLOGY 202 Cell Biology	3			C-				
CHEM 321/321L Organic Chemistry I & Lab	3/1			C-				
MATH 226 Biomath II or STAT 235 Elementary Statistics	4			C-				
GER (ex. English 110)	3							
GER (ex. Constitution Requirement)	3							
<b>Spring Semester Year 2: 14 hours</b>								
BIOLOGY 206 Genetics	3			C-				Take and pass WEPT.
CHEM 322R/322L Organic Chem II & Lab	3/1			C-				
MATH 220 Calculus II	4			C-				
CS 191 Discrete Structures I	3			C-				
GER (ex. English 225)								
<b>Summer Semester Year 2: ___ hours</b>								
May use summer semester to lighten fall and winter course loads.								
<b>Fall Semester Year 3: 16-17 hours</b>								
LS BIOC 341 Basic Biochemistry	3			C-				Apply for Graduation. Take EPP.
BIOLOGY 405 Intro to Evolution	3			C-				
PHYSICS 210 General Physics I	4-5			C-				
CS 201 Problem Solving & Program II	3			C-				
GER (ex. Humanities)	3							
<b>Spring Semester Year 3: 13-14 hours</b>								
LS BIOC 360WL Biochemistry Lab	3			C-				
LS BIOC 430 Molecular Bio & Genetic Eng.	3			C-				
PHYSICS 220 General Physics II	4-5			C-				
Elective	3							
<b>Summer Semester Year 3: ___ hours</b>								
May use summer semester to lighten fall and winter course loads.								
<b>Fall Semester Year 4: 15 hours</b>								
Biology Elective	3			C-				
Biology Elective	3			C-				
Biology Lab Elective	3			C-				
GER (ex. Social & Behavioral Science)	3							
GER (ex. Fine Art)	3							
<b>Spring Semester Year 4: 15 hours</b>								
Biology Synthesis	3			C-				Take Biology Major Field Exam.
LS BIOC 425 Bioinformatics	3			C-				
Biology Elective	3			C-				
GER (ex. Social & Behavioral Science)	3							
Elective	3							



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### Non-course requirements

Written English Proficiency Test (WEPT)

Major Field Exam (MFE)

ETS Proficiency Profile (EPP)

### Met

The School reserves the right to make changes in courses, degree requirements and course schedules without notice.

Students are expected to maintain a quality of achievement significantly above minimum UMKC standards for degree work. Individual student progress will be monitored throughout the program. Satisfactory progress is required of all students for retention in the program. Students are expected to maintain academic standards, perform satisfactorily in courses, refrain from academic dishonesty, comply with the established University timetables and requirements, and refrain from unethical or unprofessional behavior or behaviors that obstruct the training process or threaten the welfare of the student or others. Other circumstances involving student behavior will be addressed by the faculty on an individual basis.

### Graduation Requirements Summary:

Total Hours: 120 minimum, 36 of which are Upper Level (300-400 level)	Totals Hrs at UMKC: 30 hours minimum	Math and Science hours: 60 minimum	UMKC GPA: 2.0 minimum

All students completing a Bachelor of Science in the School of Biological Sciences must successfully complete the following requirements to be recommended for graduation: <http://www.umkc.edu/catalog/School of Biological Sciences General Education Requirements.html>

#### A. Communicating (9 credit hours)

- Writing and Critical Analysis (English 110 and 225)
- Oral Argumentation/Speech (Communication Studies 110 or 140)

#### B. Higher Order Thinking, Managing Information, and Valuing (6 credit hours)

- Students must successfully complete 6 hours from at least two different fields, chosen from the following list:
  - PHILOS 210 or PHILOS 222, HISTORY 201, HISTORY 202, HISTORY 206 or HISTORY 208, ANTHRO 103, SOCIOL 101 or SOCIOL 103, COMP-SCI 100 or above, MATH 210, 216, or STAT 235

#### C. Social and Behavioral Sciences (9 credit hours)

- Constitution course chosen from: History 101, 102, 360R, or Political Sciences 210
- Six additional credit hours from at least one field other than above, chosen from economics, history, political science, psychology, sociology, social science, geography, criminal justice

#### D. Humanities and Fine Arts (6 credit hours)

- One 3 credit hour course chosen from English, communication studies, foreign language, or philosophy.
- One 3 credit hour course chosen from art/art history, conservatory or theater.

#### E. Mathematics (3 credit hours)

- Students majoring in Biology will fulfill this requirement with the biology major's mathematics requirement of MATH 210 Calculus I, MATH 216 Biomathematics I, or STAT 235, Elementary Statistics.

#### F. Life and Physical Sciences (9 credit hours)

- Students majoring in biology will fulfill this requirement as a part of their major.

#### G. Total Credit Hours

- In addition to the specific area requirements listed above, students must meet other University graduation requirements including, but not limited to, 120 total credit hours, 60 credit hours from a four-year institution if coursework is transferred from a non-Missouri institution, unless described otherwise in a specific articulation agreement with the School of Biological Sciences; 36 junior/senior level credit hours, taking the EPP Exam and the Major Field Exam, residency requirements, minimum GPA standards, and other requirements that may be specified.

In addition to meeting the general education degree requirements outlined above, students pursuing the B.S. degree in biology with bioinformatics emphasis must meet the following requirements: <http://www.umkc.edu/catalog/Bioinformatics Emphasis.html>

#### 1. Biology Course Requirements:

- The following core courses (17 credit hours): Biology 108, 108L, 109, 109L, 202, 206, and LS BIOC 341
- Emphasis course Requirements (9 credit hours): LS BIOC 425, 430, and BIO 405
- Biology laboratory courses: LIFE-SCI 360WL taken with the writing intensive option and one additional lab course chosen from the following is required for a minimum of 5 credit hours: Biology 302L, 312WL, 328L/WL, LS ANAT 118L, or LS MCRB 313L/WL
- Biology Synthesis requirement (Choose a total of 3 credit hours): Biology 498WI, LIFE-SCI 490WI, 497, or 499
- Students must complete additional biology majors coursework to total at least 42 credit hours of biology courses with grades of C- or better. At least 26 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 the School of Biological Sciences. The UM Biology GPA must be at least 2.0.

#### 2. Additional Sciences and Mathematics Course Requirements

- The following courses must be completed with grades of C- or better: COMP-SCI 101, 191, 201, MATH 210 or 216, MATH 226 or STAT 235, MATH 220, Physics 210 and 220, Chemistry 211, 211L, 212R, 212LR, 321, 321L, 322, and 322L.