

BACHELOR OF ARTS: CHEMISTRY

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'.

Program Mission

Graduates with a BA in Chemistry will have the core knowledge (general, organic, and analytical chemistry) and communication skills necessary for graduate work in health-related fields and entry-level positions in the chemical industry. This is achieved through hands-on laboratory training and appropriate coursework. It is well suited for students in preparation of their graduate work in dentistry, medicine, law, and other health-related fields. Students who wish to double major may find the B.A. more amenable to the scheduling and completion of required coursework for two majors.

Program Goals

The goals of the Chemistry BA program are to produce graduates who:

- Demonstrate a functional knowledge of the basic areas of chemistry and a set of problem-solving skills sufficient to prepare students for professional schools or industrial careers.
- Demonstrate a breadth of knowledge of experimental techniques and laboratory safety.
- Demonstrate communication skills and ethical standards.

Student Learning Outcomes

Students graduating from this program will:

- Apply chemical concepts to solving theoretical and practical problems.
- Follow general laboratory practice guidelines and demonstrate proper laboratory safety measures.
- Read, analyze, interpret, and cite the chemical literature, and clearly and accurately communicate scientific information in an ethical manner.

Students graduating with a baccalaureate degree in chemistry will be prepared for entry into professional schools (e.g., medical, dental, pharmaceutical, or veterinary), graduate programs, or chemical industries.

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	Introduction to 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

Students must successfully complete the major requirements below with at least 12 hours of the noted upper division (300+) course requirements completed at UMKC.

- All majors must receive a C- or better in all chemistry courses with an overall chemistry GPA of 2.0 for graduation.
- A minimum grade of C- is required for all prerequisite courses (including physics and mathematics courses). In exceptional cases, students may receive written consent by submitting a petition to the Chemistry Undergraduate Curriculum Committee which has to be approved to waive this requirement.
- Each chemistry major must be advised by an Advisor every semester.
- Students must maintain academic standing as determined by the academic unit. Please see <https://catalog.umkc.edu/colleges-schools/sbc/chemistry/#undergraduatetext> for more information.

Code	Title	Credits
General Chemistry		
CHEM 211 or MOTRCHEM 150	General Chemistry I MOTR Chemistry I	4
CHEM 211L	Experimental General Chemistry I	1

CHEM 212R & CHEM 212LR	General Chemistry II and Experimental General Chemistry II	5
Organic Chemistry ¹		
CHEM 321 & 321L	Organic Chemistry I and Organic Chemistry Laboratory I	4
CHEM 322R & CHEM 322L	Organic Chemistry II and Organic Chemistry Laboratory II	4
Analytical Chemistry		
CHEM 341WI or CHEM 341	Analytical Chemistry I: Quantitative Analysis Analytical Chemistry I: Quantitative Analysis	4
Chemistry Electives ¹		4
Physics		
PHYSICS 210	General Physics I	4
PHYSICS 220	General Physics II	4
Math		
MATH 110 or MATH 120	Precalculus Algebra (Satisfies Math Pathway) Precalculus	3
Take any MATH or STAT course 200-level or above; MOTRMATH 110; or STAT 115.		3
Total Credits		40

- ¹ Any combination of 300-level and 400-level chemistry courses to bring the total credit hours to 26. Certain biochemistry courses also may be included in this total. Please confer with an advisor.
No more than three hours total in CHEM 350, CHEM 395, CHEM 399, CHEM 495 and CHEM 499 may be used in meeting the major course requirements.
CHEM 320 and CHEM 321 may not both be counted toward the required number of credit hours. (CHEM 321 + CHEM 322R and CHEM 320 + CHEM 322R are both acceptable combinations for meeting, in part, the bachelor of arts departmental course requirements, although the CHEM 320 + CHEM 322R combination is not preferred. The combinations CHEM 320 + CHEM 321 and CHEM 320 + CHEM 321 + CHEM 322R are not acceptable.)
Similarly, either CHEM 330 or the combination CHEM 431 + CHEM 432 is acceptable, but the combination CHEM 330 + CHEM 431 + CHEM 432 is not acceptable.

General Electives

Students must take elective credit hours to meet the minimum credit hour requirement for their degree, including at least 36 credit hours of coursework at the 300-level or above. The minimum required by the university is 120 credit hours, of which at least 30 credit hours must be taken at UMKC, but some degree programs require more.

Code	Title	Credits
General Electives		50

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/transfer/transfer-credit/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 the Registrar) 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 the

Registrar) 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
CHEM 211 & 211L ^{CC}		5 CHEM 212R & CHEM 212LR ^{CC}	5
MATH 120 or 110 ^{CC}		5 MATH 210 or STAT 235 ^{CC}	4
GEFSE 101		3 BIOLOGY 250 or LIFE-SCI 201 (recommended elective)	1
ENGLISH 110		3 GECRT-SC 101, 102, or 103	3
		16	13

Second Year

Fall Semester	Credits	Spring Semester	Credits
CHEM 321 & 321L ^{CC}		4 CHEM 322R & CHEM 322L ^{CC}	4
COMM-ST 110, 277, or 140		3 ENGLISH 225	3
GECRT-AH 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 112, 113, or 114		3 GECRT-SS 101, 102, 104, 105, 106, 107, 108, or 111	3
GECDV 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, or 211		3 GECUE 201, 203, 204, 205, 206, or 272	3
HISTORY 101, 102, or POL-SCI 210		3 General Elective	3
		16	16

Third Year

Fall Semester	Credits	Spring Semester	Credits
PHYSICS 210 ^{CC}		4 PHYSICS 220	4
3XX/4XX General Elective		3 3XX/4XX General Elective	3
BIOLOGY 251 (recommended elective; or LIFE-SCI 202 in Spring)		1 3XX/4XX General Elective	3
General Elective		3 General Elective	3
General Elective		3 General Elective	3
		14	16

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
CHEM 341WI		4 CHEM 3XX/4XX Major Elective	4
3XX/4XX General Elective (BIOLOGY 397 recommended)		3 3XX/4XX General Elective	3
3XX/4XX General Elective		3 3XX/4XX General Elective	3
General Elective		3 General Elective	3

General Elective	3	
	16	13

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..

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