MASTER OF SCIENCE: CHEMISTRY-THESIS-BASED OPTION

Student Learning Outcomes

Students graduating from this program will:

- Articulate an extensive knowledge in chemistry in both breadth and depth
- Demonstrate critical thinking and problem solving skills
- Search, read, understand and use scientific literature
- Articulate scientific information both orally and in writing
- Design and conduct rational experimental research

Requirements for Admission

Applicants should have the equivalent of an American Chemical Society (ACS)-approved bachelor's degree in chemistry. This degree includes the equivalent of: one year of general chemistry, quantitative analysis, one year of organic chemistry, one year of physical chemistry, physical chemistry laboratory, instrumental analysis, inorganic chemistry, one year of physics, and three semesters of calculus, and the ACS-recommended distribution of advanced courses and course credits. Applicants should take particular note of the physical chemistry requirement. They may be admitted as provisional students if they have a limited number of undergraduate deficiencies. At the time that admission is offered, applicants will be notified of any requirements to be met for reclassification as fully admitted. Undergraduate courses included in these requirements must be completed with grades of C- or higher.

Applications are only accepted through the online system, and include:

1. Official, confidentially transmitted transcripts.
2. Statement of purpose.
3. Two confidentially transmitted letters of recommendation (academic and/or professional).
4. English language proficiency requirement.

Applicants from foreign countries, who have an official language other than English, must achieve scores of at least 550 (paper-based), 213 (computer-based), or 79 (internet-based) on the Test of English as a Foreign Language (TOEFL) to be considered for admission.

Placement Examinations

Incoming Master of Science in Chemistry graduate students are encouraged to take organic and physical chemistry placement exams. Placement examinations are typically administered the week before the first week of classes of the fall and spring semesters. Students scoring below the 50th percentile in the organic and physical chemistry exams are required to take CHEM 5520R and CHEM 5530, respectively, before enrolling in other CHEM552X and CHEM553X classes. CHEM 5520R and CHEM 5530 count as graduate credits. Students scoring above the 50th percentile in the organic and physical chemistry placement exams can take any CHEM552X and CHEM553X classes without restriction.

Research Advisor and Thesis Supervisory Committee

Upon admission to M.S. program in chemistry, students will be advised by the Chemistry Graduate Program Coordinator, acting on behalf of the Chemistry Graduate Program Committee. Based on the Committee's evaluation of the students' transcripts and placement exam scores, the Chemistry Graduate Program Coordinator will inform students of any deficiencies and how they should be removed. The Chemistry Graduate Program Coordinator will advise the students on course curriculum until they select a research advisor. Thesis MS students are to select a research advisor from the Faculty of Chemistry by the end of their first regular (e.g. fall or spring) semester on campus. Thesis MS students, after consultation with their research advisor, should select a minimum of three members to form their thesis supervisory committee, with a majority from the Faculty of Chemistry and a minimum of one Chemistry Doctoral Faculty member, by the end of their first year in the program. The graduate program committee may approve petitions for coursework exceptions in a student's plan of study under extraordinary program circumstances.

Seminar Attendance

Students are required to present a one-hour chemistry seminar (CHEM 5611) based on research, directed studies, a pertinent literature topic, or other material, approved by their thesis advisor. Full-time M.S. students are required to attend all regularly scheduled and special seminars and colloquia. Part-time students are also required to attend these seminars but may petition the Chemistry Graduate Program Coordinator to waive this requirement all but one semester. Such students will be required either to participate fully during one semester, including the presentation of a one-hour seminar, or to present two one-hour seminars in lieu of full participation.

Minimum Requirements for Master of Science Degree

In addition to the requirements listed here, all M.S. students are subject to all general M.S. requirements of the University. See the School of Graduate Studies (https://catalog.umkc.edu/colleges-schools/graduate-studies/) section of this catalog for a complete listing.

Coursework

The emphasis of this program is research. A minimum of 31 credit hours (including research and thesis) is required. Full-time students should complete the formal coursework requirement no later than the end of their second year.

Code	Title	Credits
Both of the following Chemistry courses: [1,2]		6
CHEM 5520R	Survey Of Organic Chemistry	
CHEM 5530	Systematic Physical Chemistry	
Select one of the following Organic Chemistry Courses:		3
CHEM 5521R	Mechanisms Of Organic Reactions	
CHEM 5522	Synthetic Organic Chemistry	
Select one of the following Physical Chemistry Courses:		3
CHEM 5531	Classical Thermodynamics	
CHEM 5532	Chemical Kinetics	
CHEM 5533	Quantum Chemistry	
CHEM 5534	Molecular Spectroscopy	
CHEM 5535	Statistical Thermodynamics	
CHEM 5611	Chemistry Seminar	1
CHEM 5599	Research And Thesis (under direction of student's research advisor)	6
or CHEM 5699	Research And Dissertation	
Nine credit hours from graduate-level Chemistry courses numbered between CHEM 5521R and CHEM 5588 (excluding CHEM 5530). [3,4]		9
Additional credit hours from graduate-level Chemistry or non-Chemistry courses, which have been approved by the student's thesis supervisory committee, to complete a minimum of 31 credit hours. No more than 6 credit hours of CHEM 5590 may be applied. [4,5]		3
Total Credits		**31**

1. CHEM BS-MS students are exempt from taking these courses due to earning the Bachelor of Science in Chemistry degree from UMKC. Students who did not complete the Bachelor of Science in Chemistry degree from UMKC may be exempted from taking one or both courses by successfully passing the placement exam for the respective course.
2. Any exempted class may be substituted with a graduate-level course approved by the Chemistry Graduate Program Coordinator.
3. For CHEM BS-MS students, CHEM 451R counts for 3 of these credit hours.
4. CHEM BS-MS students should not take Chemistry graduate courses that are co-listed with a Chemistry undergraduate course they have already received graduate credits for.
5. The selected courses must be approved by the Chemistry Graduate Program Coordinator. For CHEM BS-MS students, CHEM 442R and one additional course (CHEM 367, 387 388 or a 400-level CHEM course) count for 6 of these credit hours; CHEM BS-MS students may not count additional 400-level Chemistry-related courses toward the degree if 9 credits of undergraduate coursework have already been applied.

Program Length: 2 years

Program Retention

Students who receive a grade of C+ or lower in more than two courses applicable to the M.S. program or who have a cumulative GPA lower than 3.0 on courses (not including CHEM 5590, CHEM 5599 or any undergraduate courses) applicable toward the M.S. degree after completing 18 or more credit hours of such courses, will be terminated from the degree program.

Transfer Coursework Policy

Students, who have received a grade of B- or better in graduate coursework taken as part of a degree program at another institution, may transfer up to 6 credit hours of this work on approval of a majority of the Chemistry Graduate Program Committee. A written request for this approval must be submitted within one year of full admission to the program.