

MASTER OF SCIENCE: CHEMISTRY-THESIS-BASED OPTION

Student Learning Outcomes

Students graduating from this program will:

- Possess an extensive knowledge in both breadth and depth in chemistry
- 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 students must take placement examinations in analytical, inorganic, organic, and physical chemistry. 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/or physical chemistry exams are required to enroll in CHEM 5520R and/or CHEM 5530A/CHEM 5530B, respectively. Enrollment in other graduate organic or physical chemistry courses is not permitted until CHEM 5520R or CHEM 5530A/CHEM 5530B, respectively, is (are) successfully completed. CHEM 5530A/CHEM 5530B is currently offered concurrently with CHEM 431 or CHEM 432. A student is required to take either CHEM 5530A/CHEM 431 or CHEM 5530B/CHEM 432 or both, depending on his/her performances in the various sub-disciplines of the physical chemistry placement exam. Should a student be required to take both CHEM 5530A/CHEM 431 and CHEM 5530B/CHEM 432, the average grade of the two CHEM 5530 courses will be considered for the fulfillment of the physical chemistry deficiency. Two grades of C+ or lower, or one grade of less than C- in CHEM 5520R or CHEM 5530, will result in termination from the degree program. These courses may not be counted toward the M.S. coursework requirements. Students must complete all additional coursework required as a result of the placement exams by the end of their first three regular semesters.

Graduate Program Committee

Upon admission to M.S. program in chemistry, students will be advised by the principal graduate advisor, acting on behalf of the chemistry graduate program committee. Based on the committee's evaluation of the students' transcripts and placement exam scores, the principal graduate advisor will inform students of any deficiencies and how they should be removed. The principal graduate advisor also will advise students on course curriculum. For the thesis degree, the curriculum advising is performed by the research advisor (once they have been selected). The graduate program committee serves as the supervisory committee for non-thesis M.S. students.

Seminar Attendance

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 Chair of the Department of Chemistry 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 the all general M.S. requirements of the University. See the School of Graduate Studies (<http://catalog.umkc.edu/colleges-schools/graduate-studies/>) section of this catalog for a complete listing.

Master of Science Chemistry Options:

- Analytical Chemistry
- Inorganic Chemistry
- Organic Chemistry
- Physical Chemistry
- Polymer Chemistry

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
Select one of the following Physical Chemistry Courses:		3
CHEM 5531	Classical Thermodynamics	
CHEM 5533	Quantum Chemistry	
CHEM 5534	Molecular Spectroscopy	
Select one of the following Organic Chemistry Courses:		3
CHEM 5521R	Mechanisms Of Organic Reactions	
CHEM 5522	Synthetic Organic Chemistry	
Additional credit hours from graduate-level Chemistry Courses numbered CHEM 5521R to CHEM 5589 (excluding CHEM 5530 and CHEM 5540)		6
Additional graduate-level courses for a minimum of 12 credit hours (with no more than 6 credit hours of directed studies, CHEM 5590, applied)		12
CHEM 5611	Chemistry Seminar	1
CHEM 5599	Research And Thesis (under direction of student's research advisor)	6
Total Credits		31

The selected courses must be approved by the student's supervisory committee. 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.

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 student's committee. A written request for this approval must be submitted within one year of full admission to the program.