

Doctor of Philosophy in Chemistry

Graduate studies in Chemistry at KU are intended to prepare graduate students for any of the multitude of career pathways available to individuals who hold a doctorate in the Chemical Sciences. Graduate studies differ from the undergraduate experience in that each activity and requirement of the graduate program is designed to prepare students to become independent, creative practitioners of Chemistry.

Chemists at KU still make new materials and find new and exciting applications for these compounds, and study how chemical reactions occur. We apply this knowledge to developing compounds that fight disease, to creating cleaner and more efficient chemical processes for industry and to applying chemistry in other manners that benefit society. Striving for a Ph.D. or M.S. degree is about creating and completing an independent, original research project in the chemical sciences. For KU students, this experience becomes the foundation for their future careers in the increasingly diverse scientific enterprise.

Research in Chemistry graduate programs used to take place exclusively in the laboratory. At KU, students apply a broader definition of the term laboratory to include many other types of research environments:

- Medical facilities where researchers study the efficacy of therapeutic agents and analyze the results of clinical trials,
- Computer laboratories where the modeling of molecular structure, chemical reactions and phase changes are contributing enormously to our understanding of the complex systems around us,
- Fields and streams where environmental chemists strive to understand how chemicals derived from natural processes and human activity impact the quality and diversity of life, and
- Classrooms where individuals study strategies for improving student learning of scientific concepts.

Graduate Program

For a student wishing to earn a **Doctor of Philosophy (Ph.D.)** degree or a **Master's of Science (M.S.)** degree in chemistry, the selection of a graduate school is one of the most important career decisions you will make. Your choice will not only determine where you will be during the next several years, but will lay the foundation for your future.

At the University of Kansas, we feel that our program provides exceptional and diverse opportunities for the student interested in a career in cutting-edge research, higher education or any one of a number of chemically related positions requiring an advanced degree. We have a department of outstanding faculty, each of whom is dedicated to providing mentoring to graduate students and guiding them during their journey from undergraduate to colleague.

Admission to Graduate Studies

An applicant seeking to pursue graduate study in the College may be admitted as either a degree-seeking or non-degree seeking student. Policies and procedures of Graduate Studies govern the process of Graduate admission. These may be found in the Graduate Studies (<https://catalog.ku.edu/graduate-studies/>) section of the online catalog.

Please consult the Departments & Programs (<https://catalog.ku.edu/liberal-arts-sciences/>) section of the online catalog for information

regarding program-specific admissions criteria and requirements. Special admissions requirements pertain to Interdisciplinary Studies degrees, which may be found in the Graduate Studies section of the online catalog.

Graduate Admission

Prerequisites

Before beginning graduate work, students should have completed a bachelor's degree in chemistry or a related field.

Application

Applications for admission are accepted online through the Office of Graduate Studies. Applications must include academic transcripts from all post-secondary schools attended, as well as recommendation letters from three individuals familiar with the applicant's academic background and abilities. Additional materials that are strongly recommended include Graduate Record Examination (GRE) scores, and a resume/CV and personal statement describing the applicant's qualifications and reasons for pursuing a graduate degree in chemistry. Please refer to the Department of Chemistry graduate admissions webpage for more information on our department's graduate admissions.

Non-native speakers of English must meet the English proficiency requirements. (<https://policy.ku.edu/graduate-studies/english-proficiency-international-students/>)

Although the preferred submission deadline is December 15, applications must be received by **April 15** to be considered for admission in the fall semester.

To apply, complete the online graduate application form (<https://gradapply.ku.edu/apply/>) and upload all requested documents.

Procedure

Completed applications are reviewed by a committee of faculty members from the Department of Chemistry. Offers of admission depend on favorable evaluation of the application materials and an expectation that the student will attain an undergraduate grade-point average of B or higher in chemistry and all other natural science and mathematics courses. Admission to the graduate program is contingent upon completion of a bachelor's degree in chemistry (or a related field) and all other general admissions requirements.

Ph.D. Degree Requirements

Each Ph.D. aspirant must complete the following course requirements:

1. Distribution Requirement:

Each student must complete (with a B or higher) a distribution requirement consisting of two courses selected from the following list of introductory courses in the 5 major areas of study:

Code	Title	Hours
CHEM 720	Fundamentals and Methods of Analytical Chemistry	3
CHEM 730	Coordination and Organometallic Chemistry	3
CHEM 740	Principles of Organic Reactions	3
CHEM 750	Introduction to Quantum Mechanics	3
CHEM 760	Introduction to Chemistry in Biology	3

2. Complete with a B or higher 4 courses at the 700 level or above in chemistry or a related area. The list of courses to be completed

must be agreed upon by the student and the student's research advisor and approved by the Graduate Affairs Committee before the beginning of the student's second semester in the program. (Changes to the list can only be made with the approval of the student, the research advisor, and the Graduate Affairs Committee.) **Note:** these 4 courses represent a minimal set and do not preclude the student, with consultation of the research advisor, from taking additional courses in support of the research effort.

3. Complete CHEM 700 (Responsible Scholarship in the Chemical Sciences) and CHEM 701 (Laboratory Safety in the Chemical Sciences) with a B or higher. CHEM 700 satisfies the university's Responsible Scholarship requirement for the chemistry Ph.D.

These courses must be satisfactorily completed before a student takes the comprehensive oral examination.

The aspirant also must fulfill the following requirements:

1. A comprehensive oral examination must be completed. The student must prepare a written, original research proposal before the examination is scheduled. The proposal must be presented and defended orally at the examination; however, the examination is comprehensive in nature. The student must be prepared for questions on a range of topics in the discipline. It should be noted that requirements (1) and (2) must be completed before the comprehensive oral examination can be taken. Failure to pass the oral examination before the beginning of the fourth year of graduate study leads to ineligibility for support by departmental or research funds.
2. A dissertation based on original work of high quality in one of the principal fields of chemistry must be completed.
3. A final oral examination and defense of the dissertation must be completed.

For further details, see Doctoral Degree Requirements, Doctor of Philosophy (<https://catalog.ku.edu/graduate-studies/#programstext>) in the Graduate Studies section of the online catalog.