

Chemistry- Master of Science, Doctor of Philosophy

For information, contact:

Chair, Graduate Admission Committee
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Research Areas and Facilities

The department has Bachelor's/M.S., M.S., and Ph.D. programs in analytical chemistry, biochemistry, chemistry education research, inorganic chemistry, organic chemistry, and physical chemistry, as well as in interdisciplinary areas such as biophysical chemistry, molecular biology, structural biology, materials chemistry, and nanotechnology. These programs are well supported by an active staff, excellent teaching and research facilities, and a full range of instrumentation.

The Department of Chemistry & Biochemistry houses a collection of magnetic resonance instrumentation not found at most universities. Among these instruments are 6 NMR spectrometers and 4 EPR spectrometers, and they include an 850 MHz solution NMR spectrometer and a multi-frequency pulsed EPR. Additional information regarding our NMR, EPR, and Mass Spec facilities can be found at <http://miamioh.edu/cas/academics/departments/chemistry-biochemistry/research/instrumentation/index.html>.

Admission Requirements & Application Procedures

Bachelor's/M.S. Program

This program is only for undergraduates in good standing at Miami University. Students may declare their interest in enrolling in the combined program at any time during their academic career at Miami, but ideally by spring semester of their junior year. Upon earning a minimum of 64 credit hours and having a cumulative GPA of 3.00 or greater, students may apply for admission to the combined program. If the student intends to complete a thesis, the student must have initiated undergraduate research and have support of undergraduate research mentor.

To apply, students should first meet with the program's advisor to develop a plan of study for the degree. Then, they should complete the Graduate School online application and pay the application fee. Two letters of recommendation from faculty members must be submitted, including one from the research mentor if the student intends to complete a thesis.

M.S. and Ph.D. Programs

Entry into the program requires completion of a bachelor's degree in chemistry or biochemistry or a closely related field from an accredited college or university. Typical coursework includes:

1. Two semesters of general chemistry plus laboratory
2. Two semesters of organic chemistry plus laboratory
3. Two semesters of physical chemistry plus laboratory

4. Two of the following three courses: analytical chemistry, biochemistry, and inorganic chemistry

While a student need not have taken a curriculum approved by the American Chemical Society, the coursework in chemistry, physics, and mathematics should be similar to those of approved programs (e.g., two or more semesters of calculus and calculus-based physics).

The admissions process involves two steps:

1. the Graduate School accepts students into the graduate program and
2. the Department of Chemistry & Biochemistry awards teaching assistantships to students who have been accepted by the Graduate School.

To apply to the graduate school, students must:

1. Apply online to the Miami University Graduate School
2. Pay the online application fee
3. Provide names and contact information for at least two people to write letters of recommendation (three recommended).
4. Provide transcripts. Applicants may be given provisional acceptance on the basis of unofficial transcripts.
5. Submit proof of English language proficiency in accordance with Graduate School requirements.

Program Requirements

Chemistry- Master of Science

The MS degree requires 30 credit hours total. Students are required to demonstrate competence (through examination or additional coursework) in at least three disciplines of chemistry.

Thesis Option: The minimum graded coursework is five (5) courses and thirteen (13) graded credit hours, of which at least two (2) graded credit hours must be at the 600 level or above. Students who successfully pass at least one ACS Exam upon entering the program can receive at most a one course reduction. At least 12 credit hours must be earned in courses numbered 600 or above.

Students must select an advising committee during year 1 to approve their plan of study, and must hold a conference with that committee at the end of year 1 to discuss their proposed research. Students must write and defend a thesis based on original research conducted during the course of the degree.

Non-thesis Option: The minimum graded coursework is six (6) courses and fourteen (14) graded credit hours, with at least two (2) of those graded credit hours in courses numbered 600 and above. Students who successfully pass at least one ACS Exam upon entering the program can receive at most a one course reduction. At least 12 credit hours must be earned in courses numbered 600 or above. Students must select an advising committee during year 1 to approve their plan of study, and must hold a conference with that committee at the end of year 1 to discuss their proposed research or advanced study. Students must write and pass a report based on original research or advanced study conducted during the course of the degree.

Chemistry- Doctor of Philosophy

The Ph.D. degree requires a minimum of 60 semester hours beyond the master's degree (or its equivalent). Requirements include:

1. Coursework. The minimum graded coursework is six (6) graduate courses comprising at least fourteen (14) credit hours, with at least two (2) of those graded credit hours in courses numbered 600 and above. In addition, students must demonstrate proficiency in at least three disciplines of chemistry (analytical, biochemistry, chemistry education research, inorganic, organic, or physical) either by successfully passing the ACS Exam in that discipline or by completing a course in that discipline during the first three semesters of the program. Students who successfully pass at least one ACS Exam upon entering the program can receive at most a one course reduction.

Additional courses in the student's designated area of research are required as determined by the student's faculty committee. For students earning an MS at Miami University, all graded coursework taken toward the MS also counts toward the Ph.D. graded coursework requirements. For students earning a non-thesis MS, no additional graded coursework is needed, beyond that required for the M.S.

2. Seminars. Students are required to enroll in at least one discipline-specific seminar and at least one departmental seminar each semester.

3. Conferences. Students must select an advising committee during year 1 to approve their plan of study, and must hold a conference with that committee at the end of year 1 to discuss their proposed research.

4. Annual Reports. Students must submit and pass annual reports commencing at the end of second year in the graduate program.

5. Written and Oral Exams. Students must write and pass a written proposal document, which serves as the Written Examination. Students must orally defend the proposal at the end of the second year, which serves as the Oral Examination. The proposal may be in the student's research area, with a minimum of one third of the content being beyond the student's dissertation work. Students may elect to write a proposal entirely outside of the student's dissertation research topic.

6. Original Research. Students must complete at least 20 credit hours of Research for Doctoral Dissertation (CHM 850). Students must write and defend a dissertation regarding the findings of their research.