

Chemistry MS

Admission Requirements

Individuals with at least the equivalent of the B.A. degree in the natural sciences may be admitted to the Graduate School as candidates for the M.S. degree or as precandidates for the Ph.D. degree in chemistry. A student in the M.S. program may request to transfer to the Ph.D. program by petition to the department.

The department admissions committee considers applicants' grade point averages and normally requires above-average performance in all areas of chemistry as well as physics and mathematics, or other evidence of high aptitude for graduate work in chemistry. Applicants' GRE scores, letters of recommendation, and academic programs are also considered. In some cases the committee may require successful completion of undergraduate course work as a condition of enrollment as a regular student.

Students with bachelor's degrees in fields other than chemistry may be admitted to pursue graduate studies in chemistry, but they must make up background deficiencies, usually by taking undergraduate course work.

Financial Support

Teaching assistantships are available to qualified applicants. Research assistantships and fellowships are available for advanced students. Departmental support is not normally available beyond the fifth year in the program. For further information, contact the Department of Chemistry & Biochemistry Graduate Admissions.

Preliminary Advisement

Students who have been admitted for graduate work in chemistry will be contacted by the Director of Graduate Studies in order to develop a tentative plan of study which takes into consideration the student's background and interests. Entering students are required to demonstrate proficiency at the undergraduate level in four areas of chemistry (biochemistry, organic, inorganic, physical, and analytical).

Proficiency may be demonstrated in one of the following ways:

- Outstanding performance in recent undergraduate course work.
- Satisfactory performance in standardized placement examinations. These examinations are given twice a year, approximately one week before the beginning of the fall and winter semesters.
- Successful completion of assigned course work.

The ultimate choice of whether students may enroll in the M.S. or Ph.D. degree programs resides with the chemistry faculty.

Degree Requirements

Within two years of initial enrollment, candidates for the M.S. degree in chemistry must demonstrate proficiency at the undergraduate level in four of the following five areas: biochemistry, organic, inorganic, physical, and analytical chemistry.

A minimum of 30 hours is required, normally including 3 hours in CHEM 6897 Chemistry Colloquium. No more than 3 hours in CHEM 6897 may be applied toward the 30 credit hours.

Distribution Requirement

Students may choose to focus their coursework efforts in one of four broadly defined subdiscipline areas (biochemistry, inorganic, organic, or physical chemistry). At least 6 hours of chemistry coursework in one (or more) sub-disciplines(s) outside of their major emphasis area must be completed. The following courses do not fulfill the distribution requirement:

CHEM 4212	Instrumental Analysis	3
CHEM 4233	Laboratory in Instrumental Analysis	2
CHEM 4302	Survey of Physical Chemistry with Applications to the Life Sciences	3
CHEM 4343	Physical Chemistry Laboratory II	2
CHEM 4412	Advanced Inorganic Chemistry	3
CHEM 4433	Inorganic Chemistry Laboratory	2
CHEM 4712	Biochemistry	3
CHEM 4733	Biochemistry Laboratory	2

Master of Science in Chemistry with Thesis

Students selecting this option must be enrolled full-time for at least two consecutive semesters. During this time, students are expected to enroll in CHEM 6905, Graduate Research in Chemistry, and conduct their thesis research. A maximum of 12 hours of may be applied toward the required 30 hours. At least 9 hours must be at the 5000 level, excluding CHEM 6905. A maximum of 9 hours in 3000 level or above courses outside the department may be accepted if students receive prior approval of their advisers and the Director of Graduate Studies. Students are expected to follow all other general requirements of the Graduate School regarding master's degree and thesis requirements.

Master of Science without Thesis

Unlike the thesis option, students need not be enrolled full-time. Of the required 30 hours, 15 credits must be at the 5000 level. A maximum of 6 credits of CHEM 6905, Graduate Research in Chemistry, may be included in place of 4000 level courses; a maximum of 12 hours taken in 3000 level or above courses outside the department may be accepted with prior approval of the Director of Graduate Studies.

Master of Science Degrees for Doctoral Students

Doctoral students may receive a Master's degree in their program for work completed towards the doctoral degree. To receive a Master's degree, doctoral students must complete 30 credit hours of courses, with at least 15 of these credit hours in courses numbered at or above the 5000 level. No more than 3 hours in CHEM 6897, 3 hours from a combination of CHEM 6487, CHEM 6687, CHEM 6787, CHEM 6812, CHEM 6822 and CHEM 6832, and 6 hours of CHEM 6905 may be applied.

There are no distribution requirements for the Master's degree for Doctoral students.

The non-dissertation courses presented for the M.S. degree may not include any of the following courses:

CHEM 4212	Instrumental Analysis	3
CHEM 4233	Laboratory in Instrumental Analysis	2
CHEM 4302	Survey of Physical Chemistry with Applications to the Life Sciences	3
CHEM 4343	Physical Chemistry Laboratory II	2

CHEM 4412	Advanced Inorganic Chemistry	3
CHEM 4433	Inorganic Chemistry Laboratory	2
CHEM 4712	Biochemistry	3
CHEM 4733	Biochemistry Laboratory	2

Learning Outcomes

Upon completion of the program, graduates will be able to:

- Demonstrate an advanced conceptual understanding of several chemistry sub-disciplines including organic, inorganic, physical, biological and analytical chemistry
- Demonstrate an understanding of important principles that underlie techniques used in chemical and biochemical research, thereby possessing the ability to analyze and interpret data, and make conclusions.
- Explain phenomena by means of accepted chemical principles, theories or laws in particular areas of the chemical sciences with a high degree of sophistication.
- Demonstrate knowledge of chemical nomenclature, structure, and function and be able to effectively communicate this information to both scientists and the public.
- Formulate hypotheses based on an advanced knowledge of chemistry and the current published literature.
- Demonstrate a mastery of literature resources and published findings in chemistry for the preparation of papers, reports, or summaries within a particular subfield of chemistry.