

Core Courses (9 units)

Typical core courses offered in the subdisciplines of chemistry are listed below.

Analytical

- Chemistry 511 - Theory of Separations
- Chemistry 512 - Advanced Instrumentation
- Chemistry 552 - Kinetics and Spectroscopy

Biochemistry

- Chemistry 541 - Protein Biochemistry
- Chemistry 542 - Nucleic Acid Chemistry
- Chemistry 546 - Metabolism and Catalysis

Inorganic

- Chemistry 425 - Advanced Inorganic Chemistry
- Chemistry 431 - Advanced Organic Chemistry
- Chemistry 552 - Kinetics and Spectroscopy

Organic

- Chemistry 431 - Advanced Organic Chemistry
- Chemistry 535 - Organic Synthesis
- Chemistry 537 - Organic Spectroscopy

Physical

- Chemistry 512 - Advanced Instrumentation
- Chemistry 551 - Quantum Chemistry
- Chemistry 552 - Kinetics and Spectroscopy

Electives (9-12 units)

In addition to the core course, students must complete a minimum of nine semester units of electives at the 400- or 500-level. Courses in physics or biology may be used as electives with approval of the Graduate Committee.

Seminar – As part of the Chemistry 505A requirement, graduate students must attend department seminars over a one-year period and also give four short oral presentations during that time period. Each student also conducts a thorough review of the literature of a topic approved by the department and presents a fifty-minute seminar to the department as part of the Chemistry 505B requirement.

Research – The primary requirement for the master's degree is an original independent research project culminating in a written master's thesis accompanied by an oral thesis defense. Students may begin research after successfully earning passing scores on two placement exams.

Where can I get more information?

For more information about the Department of Chemistry and Biochemistry or to contact the current Graduate Program Adviser, please visit the department website at <http://chemistry.fullerton.edu> or email ChemGradAdv@fullerton.edu. Students can also visit us on campus in McCarthy Hall 580.



Master of Science in Chemistry

College of Natural Sciences and Mathematics

Why pursue the Master of Science in Chemistry?

Because of its broad scope, contemporary chemistry offers exciting employment opportunities in rapidly growing fields, such as materials science, polymers, biochemistry, biotechnology, pharmaceutical/medicinal chemistry, chemical education research and environmental science. Graduates with a master's degree in chemistry are prepared to enter any of these fields, or others, since chemistry is the central science with connections to physics, mathematics, biology, medicine, and environmental sciences. According to the American Chemical Society, the national professional association for chemists, "Many predict a growing role for chemistry as we tackle the major issues confronting the world in the 21st century: providing energy, responding to regulation, protecting the environment, improving health and feeding the world."

The reasons for pursuing a master's degree in chemistry are as diverse as our students. Many obtain their master's degree to gain entry into industry or government positions that require a greater degree of expertise, responsibility and independence that cannot be expected of a candidate with a bachelor's degree. Others use the master's program as a stepping-stone to doctoral studies by improving their grade point average and enhancing their research experience. Still other students obtain the master's degree to gain expertise in chemical education – in fact, a number of our graduates are teaching at local community colleges.

Why choose Cal State Fullerton?

Teaching is our first priority – Our faculty members take a personal interest in the success of their students. They provide one-on-one mentoring and fashion a graduate experience that meets the individual needs of each student. Our graduate classes are small, providing numerous opportunities for interaction with professors and fellow students. Graduate classes are offered in learning environments that are conducive to the development of critical thinking and personal communication skills, in addition to improving scientific content knowledge.

Flexibility – Our program is flexible enough to allow one to pursue a degree on either a part-time or full-time basis. Most graduate courses are offered in the late afternoon and early evening to accommodate students who are employed.

Outstanding Research Opportunities – Research opportunities are available in analytical, biochemistry, bioorganic, computational, chemical education research, environmental, organic and physical chemistry. We have excellent facilities and instruments such as 400 MHz NMR, X-Band EPR, HPLC, GC, GC-MS, ITC, and lasers to support high quality research.

The M.S. in Chemistry is a Research-Based Degree – Unlike M.S. programs at many other universities, our master’s degree is primarily a research-based degree, which means that during the degree program students spend a major part of their time in a research laboratory working on an independent research project. The students carry out sophisticated experiments, and gain valuable critical thinking skills by analyzing data and planning the next steps in their research projects. The degree culminates in a written thesis and a public oral defense of the thesis.

High Quality Faculty – Although Cal State Fullerton is primarily a teaching institution, most faculty have active research programs. Our faculty members have been awarded numerous grants from agencies and organizations such as Research Corporation, Petroleum Research Fund, Camille and Henry Dreyfus Foundation, National Science Foundation, National Institutes of Health, National Aeronautical and Space Administration, Howard Hughes Medical Institute, and United States Environmental Protection Agency. Our faculty serve on many national committees and boards, review proposals for national agencies, and serve as editors and/or reviewers for national and international scientific journals. For the specific research areas of the faculty, refer to the attached Faculty Research Interests Sheet.

National Reputation – Cal State Fullerton has a solid track record for training master’s students to enter the workforce, graduate and professional programs, and community college teaching. Alumni from our graduate program are highly successful in achieving their career goals.

Candidates seeking admission to the master’s program are expected to meet the following requirements:

- Bachelor’s degree in chemistry, biochemistry or a related field from an accredited college or university
- Minimum overall GPA of 2.75
- Science GPA of 2.75 or better in chemistry and/or biochemistry classes
- Graduate Record Examination (GRE) General Test is required for all applicants

What is required for admission to the master’s program?

- GRE Subject Test (in Chemistry or Biochemistry) is highly recommended for those who have an undergraduate degree from an institution within North America
- GRE Subject Test (in Chemistry or Biochemistry) is required for students who hold undergraduate degrees from institutions outside of North America
- TOEFL, Test of English as a Foreign Language – All graduate applicants, regardless of citizenship, who have not attended schools at the secondary level or above for at least three years full time where English is the principal language of instruction must present the following minimum scores to be considered for admission:

TOEFL iBT Format (Internet-based test)	80
TOEFL PBT Format (Paper-based test)	550

- Official transcripts of undergraduate study – Foreign language transcripts must be accompanied by certified English translations
- Three professional letters of recommendation are required. Forms to accompany the Recommendation Letters are available from the department Graduate Studies website <http://chemistry.fullerton.edu/DeptWebsite/ChemMS.html>.

What are the degree requirements?

Placement Exams – Placement exams are used to assess undergraduate preparation. Students are expected to meet the requirement in four of the six areas: analytical, biochemistry, biology, inorganic, organic and physical chemistry. Graduate students in chemistry must pass exams in analytical, organic, and physical chemistry, as well as exams in either inorganic or biochemistry. Graduate students in biochemistry must pass exams in organic, analytical, and biochemistry, as well as exams in either biology or physical chemistry. In addition to subject placement exams, all incoming graduate students must take an analytical writing exam in order to assess the ability to communicate effectively in English. The analytical writing exam may be waived under certain conditions including a minimum score of 4 on the GRE Writing Assessment Test.

Required Courses – The degree program consists of 30 semester units to be completed with a minimum GPA of 3.0. The following courses are required:

- Chemistry 505A, B - Seminar in Chemistry (2 units)
- Chemistry 598 - Thesis (2-4 units)
- Chemistry 599 - Independent Graduate Research (3-6 units)

The remaining units are divided into core courses and electives.