

CHEMISTRY, M.S.

Credits: 31

CIP Code: 400501

Concentration:

- Biochemistry (<http://catalog.cau.edu/graduate/programs-study/arts-sciences/natural-sciences-mathematics/chemistry/chemistry-ms/biochemistry/>)

Program Overview

The **Master of Science Degree in Chemistry** is available for those students interested in gaining the necessary knowledge and skills for advancing in their career and positioning themselves for a non-entry level position in chemistry. Students in the program are also prepared to pursue an advanced degree in chemistry or entry to a professional school.

Admissions Requirements

Students apply to the Master of Science Degree must possess a BS or BA in Chemistry or related field. In addition to the General Admissions Requirements as published in this Catalog, applicants to the **Master of Science Degree in Chemistry** must have completed two semesters each of physics and calculus. GRE Required.

Program Objectives

- Introduce students to the fundamental laboratory and technical concepts and background concepts in the core areas of organic, analytical, physical and inorganic chemistry.
- Prepare students to be proficient in the methods of scientific inquiry in the fields of chemistry and its associated disciplines.
- Prepare student to engage in scholarly research methods and discoveries of the discipline.
- Prepare student for advanced studies, professional careers in chemistry and related fields, or other scholarly endeavors.

Student Learning Outcomes

Students pursuing the **Master of Science Degree in Chemistry** will:

- Apply scientific knowledge and quantitative and qualitative skills to analyze and solve a wide-range of problems in the area physical and molecular sciences.
- Apply fundamental concepts in the core areas of organic, analytical, physical and inorganic chemistry to execute experimental projects.
- Utilize technical skill sets to collect, analyze and interpret data to conduct independent project-based research.
- Effectively communicate information on molecular sciences in written and oral formats to scientific and non-scientific audiences.
- Practice professional ethics in the conduct of scientific inquiry, scholarly research, and independent scientific thinking.

Degree Requirements

In addition to the General Degree Requirements as published in this Catalog, students pursuing the **Master of Science Degree in Chemistry** and the **Master of Science Degree in Chemistry with concentration in Biochemistry** are required to pass **Basic Examinations** during the week of registration in order to insure that they begin graduate work at a level commensurate with their background. The examinations include the subject matter covered by the following courses: general chemistry,

qualitative and analytical chemistry, organic chemistry, physical chemistry, and mathematics through calculus.

A candidate for the **Master of Science Degree in Chemistry** must complete a minimum of thirty-one (31) graduate credits in a program of study and research approved by the Department Chair in consultation with the student and his/her major professor.

Students interested in pursuing the **Master of Science Degree in Chemistry with concentration in Biochemistry** must complete a minimum of thirty-seven (36) graduate credits and research approved by the Department Chair in consultation with the student and his/her major professor.

Chemistry, M.S.

Code	Title	Hours
Core Requirements		
CCHE 508	Seminar in Chemistry ¹	1
CCHE 512	Instrumental Methods	3
CCHE 521	Advanced Inorganic Chemistry	3
CCHE 531	Mechanistic Organic Chem I	3
CCHE 532	Organic Synthesis	3
CCHE 541	Thermodynamics	3
CCHE 542	Quantum Mechanics	3
Electives in Chemistry		
CCHE XXX	Graduate Elective in Chemistry	3
CCHE XXX	Graduate Elective in Chemistry	3
Total Hours		25

¹ Required of all graduate students and must be taken for one semester to earn one hour of credit. Students generally register for this course during the semester of their thesis defense.

Thesis Research: (6 Credits)

CCHE 7XX, Thesis Research Area of Study (Variable Credits). Students are strongly encouraged to take a Thesis Research course in the Summer of year 1.

Must be approved by the Department Chair in consultation with the student's major area professor.

Qualifying Examinations Chemistry, M.S.

Course	Title	Hours
First Year		
First Semester		
CCHE 521	Advanced Inorganic Chemistry	3
CCHE 531	Mechanistic Organic Chem I	3
CCHE 541	Thermodynamics	3
Hours		9
Second Semester		
CCHE 542	Quantum Mechanics	3
CCHE 512	Instrumental Methods	3
CCHE 532	Organic Synthesis	3
Hours		9

Second Year**First Semester**

CCHE XXX	Graduate Elective in Chemistry	3
CCHE 7X0	Thesis Research ¹	3
CCHE 508	Seminar in Chemistry ²	0
Hours		6

Second Semester

CCHE XXX	Graduate Elective in Chemistry	3
CCHE 7X0	Thesis Research ¹	3
CCHE 508	Seminar in Chemistry ²	1
Hours		7
Total Hours		31

¹ Must be approved by the Department Chair in consultation with the student's major area professor.

² Required of all graduate students and must be taken for one semester to earn one hour of credit. Students generally register for this course during their semester of defense of the thesis.