

# MASTER OF SCIENCE IN CHEMISTRY

## Admission to Program

Students must meet these criteria:

- Satisfy the University's admission requirements.
- Have completed a BS or BA in chemistry, biochemistry, or a related field such as molecular biology, chemical engineering, materials science, or physics. Please note that some graduate courses assume the enrolled students have completed a year of physical chemistry and/or a semester of biochemistry. Additional coursework may be required for non-chemistry or biochemistry applicants.
- Have a GPA of at least 3.0 in chemistry and related courses.
- Applicants are required to fill out the department application form. Department application procedures are described at <https://chemistry.sfsu.edu/graduate> (<https://chemistry.sfsu.edu/graduate/>).
- Submit three letters of recommendation from individuals familiar with previous academic work and/or potential for graduate work in chemistry. These letters should be sent through CalApply.

## Program Learning Outcomes

- Demonstrate in-depth knowledge in a subdiscipline of chemistry.
- Organize and communicate scientific information clearly and concisely, both verbally and in writing.
- Use the scientific literature to develop and implement a research project.
- Demonstrate independence in designing and conducting experiments, analyzing data, and interpreting results.
- Keep accurate records of experiments and data.
- Demonstrate an ability to engage in collaborative scientific activities in research and coursework.

## Written English Proficiency Requirement

### Level One

The Level One writing requirement is satisfied by successfully completing CHEM 879.

### Level Two

The Level Two writing requirement is satisfied by successfully completing CHEM 880, a thesis (CHEM 898) or written manuscript (CHEM 895), and an oral defense of the research project.

## Advancement to Candidacy

To advance to candidacy, students must:

- Pass any three of the American Chemical Society (ACS) graduate entrance examinations: analytical, biochemistry, inorganic, organic, or physical chemistry. These examinations cover mainly undergraduate-level material.
- Satisfy Level One of the written English proficiency requirement.
- Satisfy all course deficiencies stipulated upon entrance into the program.
- File an Advancement to Candidacy (ATC) form.

**Note:** After initiating a research project, a graduate student must enroll each semester in CHEM 897 while actively engaged in research for the

M.S. degree. A maximum of 9 units of CHEM 897 may be included in the Advancement to Candidacy.

## Chemistry (M.S.) – 30-33 units

### Program (6 units)

Code	Title	Units
CHEM 879	Research Methods I	3
CHEM 880	Research Methods II	3

### Research Requirements (9-12 units)

A research project in organic, analytical, physical, environmental, inorganic, or chemical education subdiscipline required.

Code	Title	Units
CHEM 897	Research	1-3

### Culminating Experience (3 units)

One of the following Culminating Experience courses selected with prior consultation with Culminating Experience committee:

Code	Title	Units
CHEM 898	Master's Thesis	3
or CHEM 895	Research Project	
	Oral Defense of Culminating Experience	

### Related Study (9 – 12 units)

Graduate courses in biochemistry, chemistry, physics, mathematics, or biology on advisement of graduate major advisor. Upper-division courses may be used with permission of a graduate major advisor.

Code	Title	Units
<b>Analytical/Environmental/Methods (AEM)</b>		
CHEM 741	Electron Microscopy	4
CHEM 800	Special Topics in Chemistry (X-Ray Techniques)	3
CHEM 820		
CHEM 821	Mass Spectrometry - Principles and Practice	3
<b>Biochemistry (BIO)</b>		
CHEM 800	Special Topics in Chemistry (Proteomics)	3
CHEM 800	Special Topics in Chemistry (Enzymology)	3
CHEM 841	Enzymology	3
CHEM 851	Biochemical Spectroscopy	3
<b>Organic/Medicinal (OM)</b>		
CHEM 800	Special Topics in Chemistry (Natural Products)	3
CHEM 800	Special Topics in Chemistry (Adv. Org. Chem. - Molec. Struct. & Reactivity)	3
CHEM 832	Organic Synthesis	3
CHEM 834	Organic Spectroscopic Methods	3
CHEM 842	Bioorganic and Medicinal Chemistry	3
<b>Physical/Inorganic/Computational (PIC)</b>		
CHEM 851	Biochemical Spectroscopy	3
CHEM 800	Special Topics in Chemistry	3
CHEM 852		
CHEM 870	Computational Methods in Chemistry	3
<b>Chemical Education</b>		
CHEM 885		