

# MASTER OF SCIENCE IN CHEMISTRY: CONCENTRATION IN BIOCHEMISTRY

## Admission to Program

Students must meet these criteria:

- Satisfy the University's admission requirements.
- Have completed an undergraduate major in chemistry or biochemistry. If this criterion is not met, the student may be admitted, but additional coursework will be required.
- Have a GPA of at least 3.0 in chemistry and related courses.
- Report GRE scores of the general (not subject) exams.
- Applicants are required to fill out the department application form. Department application procedures are described at [www.chembiochem.sfsu.edu/graduate\\_app\\_proc](http://www.chembiochem.sfsu.edu/graduate_app_proc).
- 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 to the graduate advisor, Department of Chemistry and Biochemistry.

## Written English Proficiency Requirement

### Level One

Applicants are required to satisfy the entry-level written English proficiency requirement by a score of 4 or above on the GRE Analytical Writing section. Applicants who do not meet the GRE AWA score, but meet all other requirements, may be admitted on a conditional basis. The conditional status will be removed upon successful completion of a writing-based entrance exam. Admitted students who do not pass the writing-based entrance exam will take SCI 614 or an equivalent writing course by the end of the second semester.

### Level Two

Students will demonstrate an advanced level of proficiency in written and spoken English 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 on the Advancement to Candidacy.

## Chemistry (M.S.): Concentration Biochemistry – minimum 30 units Program (6 units)

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

## Research Requirements (9-12 units)

Research project in biochemistry, bioorganic, bioanalytical, biophysical, bioinorganic, biomedical or biochemical 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 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	NMR Applications and Techniques	3
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	Statistical Mechanics: Molecular Relaxation	3
CHEM 870	Computational Methods in Chemistry	3
<b>Chemical Education</b>		
CHEM 885	Teaching College Chemistry	3