

MS in Chemistry - Biochemistry Option

Purpose: To add an MS in Chemistry with an Option in Biochemistry to the present MS in Chemistry program for those students who have Biochemistry undergraduate background and ambition to pursue higher studies and/or employment in Biochemistry-related fields. The MS in Chemistry - Biochemistry Option program outlined here will allow recruitment and graduation of students interested in Biochemistry-related fields.

This proposed MS in Chemistry - Biochemistry Option degree program significantly differs from the MS degree in Biochemistry and Biotechnology (BCT). BCT is a jointly offered program by the Biological Sciences and Chemistry and Biochemistry Departments which does not require a thesis, and which includes a different set of coursework and other requirements to complete the degree. The BCT program prepares students for biotechnology-related employment with limited biochemistry content, whereas the proposed Biochemistry Option within the MS in Chemistry program prepares students for higher studies (e.g. Doctoral Degree), community college and other teaching opportunities, as well as industrial employment with significant chemistry and biochemistry content. Additionally, the admission criteria and the duration of these two programs are different.

The requirements for the new program are listed starting on the second page, following the requirements for the present MS in Chemistry. This order and listing mirrors the listing that would appear in the course catalog.

MS Degree Requirements

Degree requirements include those outlined for the Master's Degree by the Graduate School (See ["Requirements for the Master's Degree"](#)). All students must take core courses to count 24 semester hours. Students must also take elective courses, which total 6 semester hours.

Proposed catalog language, including new MS in Chemistry – Biochemistry Option

MS in Chemistry

The following core courses are required. Total credits: 24

- CHM 5000 - Graduate Seminar I. Credits: 0
- CHM 5001 - Graduate Seminar II. Credits: 1
- CHM 5002 - Introduction to Graduate Chemical Research. Credits: 1
- CHM 5003 - Critical Reading of Chemical Literature. Credits: 1
- CHM 5180 - Bioanalytical Problem Solving. Credits: 3
- CHM 5210 - Bonding and Reactivity or CHM 5300 Molecular Spectroscopy. Credits: 3
- CHM 5360 - Supramolecular Chemistry and Nanotechnology. Credits: 3
- CHM 5420 - Modern Organic Chemistry. Credits: 3
- CHM 5890 - Graduate Research. Credits: 1 to 6

This course is repeated by using subsequent course numbers, please consult adviser.

- CHM 5950 - Thesis. Credits: 3

The following elective courses are available for current MS in Chemistry:

Total credits needed: 6

- CHM 4750 - Environmental Chemistry. Credits: 3
- CHM 4770 - Molecular Spectroscopy. Credits: 2
- CHM 4790 - Medicinal Chemistry. Credits: 3

- CHM 4800 - Selected Topics in Chemistry. Credits: 1 to 3
- CHM 4860 - Advanced Biochemistry. Credits: 3
- CHM 4900 - Inorganic Chemistry II. Credits: 3
- CHM 4915 - Advanced Laboratory. Credits: 3
- CHM 5250 - Special Topics. Credits: 3
- CHM 5300 - Molecular Spectroscopy. Credits: 3

MS in Chemistry - Biochemistry Option

Core course replacement

Students will be allowed to replace **two selected** core Chemistry courses (See list below) with **two selected** Biology courses. The remainder of the Core Course requirements listed under the current MS in Chemistry also apply to the MS in Chemistry – Biochemistry Option program.

Replaceable Chemistry courses:

- CHM 5210 - Bonding and Reactivity or CHM 5300 Molecular Spectroscopy. Credits: 3
- CHM 5360 - Supramolecular Chemistry and Nanotechnology. Credits: 3
- CHM 5420 - Modern Organic Chemistry. Credits: 3

Biology replacement courses:

- BIO 5250 - Biological Microtechnique. Credits: 4
- BIO 5400 - Cell Physiology. Credits: 4
- BIO 5406 - Endocrinology. Credits: 4
- BIO 5433 - Neurobiology of Diseases. Credits: 4
- BIO 5434 - Neurobiology. Credits: 3
- BIO 5435 - Advanced Neurobiology. Credits: 3

The following elective courses are available for MS in Chemistry – Biochemistry Option:

Total credits needed: 6 (CHM 4860 is highly recommended)

- BIO 4751 - Advanced Molecular Cell Biology. Credits: 3
- BIO 4818 - Environmental Microbiology. Credits: 4
- BIO 4836 - Pathogenic Microbiology. Credits: 4
- CHM 4750 - Environmental Chemistry. Credits: 3
- CHM 4770 - Molecular Spectroscopy. Credits: 2
- CHM 4790 - Medicinal Chemistry. Credits: 3
- CHM 4800 - Selected Topics in Chemistry. Credits: 1 to 3
- CHM 4860 - Advanced Biochemistry. Credits: 3
- CHM 4900 - Inorganic Chemistry II. Credits: 3
- CHM 4915 - Advanced Laboratory. Credits: 3
- CHM 5250 - Special Topics. Credits: 3
- CHM 5300 - Molecular Spectroscopy. Credits: 3

Approved by Department of Chemistry and Biochemistry Graduate Committee 11/1/18

Approved by Department of Chemistry and Biochemistry Faculty 11/2/18

Approved by College of Sciences Curriculum Committee 11/30/18

Approved by Council on Graduate Studies _____