

New Program Proposal

Chemistry, Accelerated Master's Biochemistry Emphasis Area

The Department of Chemistry & Biochemistry offers an Accelerated MS degree program that allows students to simultaneously earn their BS and MS in Chemistry with a Biochemistry Emphasis. Students accepted to the Accelerated MS degree program will be permitted to count up to 9 credits toward both degrees.

Students are encouraged to work closely with their Chemistry & Biochemistry undergraduate advisor and the Accelerated MS advisor to ensure that courses are timed appropriately to maximize their benefits. It is strongly recommended that students meet with the Accelerated MS advisor as soon as possible, ideally before their junior year.

Students in the Accelerated MS program will complete the MS through the non-thesis coursework path. The thesis MS and Professional Science MS programs cannot be combined with this program.

Eligibility

Students need to have fulfilled the core curriculum requirements for the Bachelor of Science in Chemistry with a Biochemistry Emphasis degree below prior to applying for the Accelerated MS program.

Related Area Courses

MATH 1800	Analytic Geometry and Calculus I	5
MATH 1900	Analytic Geometry and Calculus II	5
MATH 2000	Analytic Geometry and Calculus III	5
PHYSICS 2111	Physics: Mechanics and Heat	4
PHYSICS 2111L	Mechanics and Heat Laboratory	1
PHYSICS 2112	Physics: Electricity, Magnetism, and Optics	4
PHYSICS 2112L	Electricity, Magnetism, and Optics Laboratory	1
BIOL 1831	Introductory Biology: From Molecules to Organisms (MOTR BIOL 150L)	5

Chemistry Courses

CHEM 1000	Chemistry: The Central Science	1
-----------	--------------------------------	---

CHEM 1111	Introductory Chemistry I (MOTR CHEM 150L)	5
CHEM 1121	Introductory Chemistry II	5
CHEM 2223	Quantitative Analysis in Chemistry	4
CHEM 2612	Organic Chemistry I	3
CHEM 2622	Organic Chemistry II	3
CHEM 2633	Organic Chemistry Laboratory	2
CHEM 3302	Physical Chemistry for The Life Sciences	3
CHEM 3312	Physical Chemistry I: Thermodynamics and Kinetics	3
CHEM 3322	Physical Chemistry II: Quantum Chemistry and Spectroscopy	3
CHEM 3333	Physical Chemistry Laboratory I	2
CHEM 3412	Basic Inorganic Chemistry	3
CHEM 3643	Advanced Organic Chemistry Laboratory	2

Admission Requirements

Provisional Admission

Applicants are considered for provisional admission if they meet the following criteria.

- Earned 60 hours as an undergraduate
- Have a minimum GPA of 3.0 with a B or better in all core courses listed above
- Have approval from both their Chemistry undergraduate advisor and Chemistry MS Program Director

It is recommended to apply for provisional status as a junior, preferably in the first semester of junior year.

Graduate course options for provisional students are listed below. Courses completed by undergraduate students who have been provisionally admitted to the Accelerated MS program can count towards both their BS and MS degrees. Courses in this phase will be charged at the undergraduate tuition rate; however, these courses will count toward the master's degree. Courses must be approved before the semester starts. Any 4000-level course taken before admission to the Accelerated MS program will apply to the undergraduate requirements.

Seniors who have earned more than 105 credit hours cannot be considered for the Accelerated MS degree program.

Graduate Admission

Applicants are considered for graduate admission with the following criteria.

- Are in their final semester in undergraduate status
- Have a minimum GPA of 3.0 since being granted provisional status
- Submitted at least one positive recommendation letter from an UMSL Chemistry faculty member
- Submitted to the Chemistry Graduate Admissions Director a statement of purpose explaining why an advanced degree in Chemistry is of interest and why the applicant merits consideration
- Have met with the Chemistry Accelerated MS advisor

Based on the above information, the Chemistry undergraduate advisor, Accelerated MS advisor and Graduate Admissions Director will determine whether the student can apply for graduate admission. Final decisions concerning graduate admission are made by the Graduate Admissions Director and the Graduate School. Students admitted to the graduate program must take graduate courses until the completion of the MS degree.

Completing the BS and MS Degrees

To finish the Chemistry with a Biochemistry Emphasis BS degree, a student must also complete the following requirements.

Two credit hours of advanced elective work		2
BIOL 2012	Genetics	3
CHEM 4233	Laboratory in Instrumental Analysis	2
CHEM 4612	Introduction to Macromolecular, Supramolecular, and Nanoscale Chemistry	1
CHEM 4712	Biochemistry	3
CHEM 4733	Biochemistry Laboratory	2
CHEM 4897	Seminar in Chemistry	2
CHEM 5212	Advanced Instrumental Analysis	3
CHEM 5722	Advanced Graduate Biochemistry	3

Courses for Both BS and MS Credit

The following Chemistry courses can count toward both the Chemistry BS and Chemistry MS degree, up to a maximum of 9 credit hours.

CHEM 4733	Biochemistry Laboratory	2
CHEM 5212	Advanced Instrumental Analysis	3
CHEM 5722	Advanced Graduate Biochemistry	3
CHEM 6787	Problem Seminar in Biochemistry	1
Total Hours		9

Other courses may be allowed upon approval of the Graduate Program Director.

Required and elective courses for the MS degree are shown below.

Required

CHEM 6897	Chemistry Colloquium (must take 3 times)	3
-----------	--	---

Electives **18**

CHEM 5302	Foundations of Physical Chemistry	
CHEM 5396	Directed Readings in Physical Chemistry	
CHEM 5462	Organometallic Chemistry of the Transition Elements	
CHEM 5494	Special Topics in Inorganic Chemistry	
CHEM 5602	Advanced Organic Chemistry I - Physical Organic	
CHEM 5612	Advanced Organic Chemistry II - Reactions And Synthesis	
CHEM 5652	Spectroscopic Identification of Organic Compounds	
CHEM 5694	Special Topics in Organic Chemistry	
CHEM 5722	Advanced Graduate Biochemistry	
CHEM 5772	Advanced Physical Biochemistry	
CHEM 5774	Bioinformatics	
CHEM 5794	Special Topics in Biochemistry	
CHEM 6487	Problem Seminar in Inorganic Chemistry	
CHEM 6687	Problem Seminar in Organic Chemistry	
CHEM 6787	Problem Seminar in Biochemistry	

Awarding of Degrees

The undergraduate degree may be awarded when the student meets the requirements for the BS degree, including at least 120 total credit hours, completion of the Chemistry core, elective, and laboratory requirements, and completion of the associated requirements. The student must work with the undergraduate advisor and/or the Accelerated MS advisor to apply to graduate. In their final semester in undergraduate status, the student must apply and be admitted to the graduate program, to begin the following semester.

The graduate degree will be awarded when the student meets the requirements for the MS degree, which is 30 credit hours of coursework at the graduate level. Required and elective courses for the MS degree are shown below. The student must work with the Accelerated MS advisor and Graduate Program Director to apply to graduate.

If the student fails to enroll for more than one year after receiving the bachelor's degree, the student can still earn the master's degree, but the graduate-level credits earned as an undergraduate cannot be used for the graduate degree.

Justification for request:

The proposed Accelerated MS program will provide an attractive option to current undergraduate students who wish to pursue their MS at UMSL. Unlike our previous 2+3 program, students pursuing an Accelerated MS will obtain their BS when they have completed the undergraduate requirements. In addition, they will be able to take more credits in undergrad status toward the MS (9 versus 6).