

Chemistry, BS

~~Bachelor of Science in Chemistry~~

This degree may be taken as a terminal degree by students intending to become professional chemists or for preparation for graduate work in chemistry or biochemistry. Students may choose to specialize in chemistry or biochemistry.

Core 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	3
CHEM 2612	Organic Chemistry I	3
CHEM 2622	Organic Chemistry II	3
CHEM 2633	Organic Chemistry Laboratory	2
CHEM 3022	Introduction to Chemical Literature	1
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	2
CHEM 4897	Seminar in Chemistry	2

Select one of the following:		2
CHEM 3643	Advanced Organic Chemistry Laboratory	
CHEM 4233	Laboratory in Instrumental Analysis	
CHEM 4343	Physical Chemistry Laboratory II	
CHEM 4433	Inorganic Chemistry Laboratory	
CHEM 4733	Biochemistry Laboratory	
Total Hours		34 37

Chemistry Option

In addition to the requirements above, the following chemistry courses are required:

CHEM 3643	Advanced Organic Chemistry Laboratory	2
CHEM 4212	Instrumental Analysis	3
CHEM 4233	Laboratory in Instrumental Analysis	2
CHEM 4343	Physical Chemistry Laboratory II	2
CHEM 4412	Advanced Inorganic Chemistry	3
CHEM 4433	Inorganic Chemistry Laboratory	2
CHEM 4612	Introduction to Macromolecular, Supramolecular, and Nanoscale Chemistry	1
CHEM 4712	Biochemistry	3

Total Hours

18

No more than 45 hours in chemistry may be applied toward the degree. Each chemistry major must present a seminar and pass a comprehensive examination during the senior year. At least 12 credits at the 3000 level or higher must be completed at UMSL. The Department of Chemistry and Biochemistry may require students to pass a tracking test in order to enroll in the next level course, provided this or an equivalent test is administered to all students seeking to enroll in that course.

Biochemistry Option

In addition to the requirements above, the following chemistry and biology courses are required:

Chemistry		
CHEM 3643	Advanced Organic Chemistry Laboratory	2
CHEM 4212	Instrumental Analysis	3
CHEM 4233	Laboratory in Instrumental Analysis	2
CHEM 4612	Introduction to Macromolecular, Supramolecular, and Nanoscale Chemistry	1
CHEM 4712	Biochemistry	3
CHEM 4722	Advanced Biochemistry	3
CHEM 4733	Biochemistry Laboratory	2
Select one of the following:		3
CHEM 4772	Physical Biochemistry	

CHEM 4774	Introduction to Bioinformatics	
CHEM 3905	Chemical Research (3 credits)	
BIOL 4905	Research (3 credits)	
Biology		
BIOL 1831	Introductory Biology: From Molecules to Organisms (MOTR BIOL 150L)	5
BIOL 2012	Genetics	3
or BIOL 2482	Microbiology	
BIOL 3622	Cell Biology	
Total Hours		19 27

If either research option is chosen, the project must be in biochemistry and must include a written final report submitted to the Department of Chemistry and Biochemistry.

Sign-offs from other departments affected by this proposal

Department	Contact Person	Phone #	Objections
S002850	Wendy Olivas	X4241	No

Rationale

a) Biology 2012 has recently become a pre-requisite for Biology 3622, so it no longer makes sense to have students chose between these two. BIOL 2482, Microbiology was suggested by the Biology department as a replacement in this option, (b) Correct an error in the Bulletin, since the beginning of Biochemistry option students were to take BIOL 1831 and one other course, it is erroneous that the Bulletin lists both BIOL 2012 and BIOL 3622 as required and indeed Degree Audit is programmed as BIOL 2012 or BIOL 3622. So, now we proposed to change this to BIOL 2012 or BIOL 2482. This error was introduced by those who edit the Bulletin and not by the Department. (c) Addition of CHEM 4774, Introduction to Bioinformatics as an elective. For CHEM 1000, In order to address the issue of poor retention of chemistry majors, primarily of those who enter our program through the lower division courses, a course designed to inform, inspire, and motivate students to continue as chemistry majors is proposed. It is also proposed that students who transfer in at a later point in the curriculum can benefit by become more informed about chemistry related careers and research opportunities.