

# CHEMISTRY, BACHELOR OF SCIENCE WITH A CONCENTRATION IN MEDICINAL CHEMISTRY

To obtain a B.S. with a major in Chemistry and a concentration in Medicinal Chemistry, a student must fulfill university, college, and departmental requirements. Minimum hour requirements follow:

- 46 hours of University General Education courses (*Testing out of academic skills requirements and enrolling in General Education courses that meet both distribution and diversity requirements are likely to reduce the total number of General Education hours to 34 or fewer.*)
- 12 hours college breadth requirement
- 71 hours of major courses (including the optional concentration)
- Elective hours as required to total 120 hours

TOTAL HOURS: 120

## Requirements

A Bachelor of Science Degree in Chemistry with a Concentration in Medicinal Chemistry requires a minimum of 51 credit hours of course work in both chemistry and biology.

Code	Title	Credits
<b>Required Chemistry Courses</b>		
CHEM 1180 & CHEM 1184	GENERAL CHEMISTRY I and GENERAL CHEMISTRY I LABORATORY	4
CHEM 1190 & CHEM 1194	GENERAL CHEMISTRY II and GENERAL CHEMISTRY II LABORATORY	4
CHEM 2250	ORGANIC CHEMISTRY I	3
CHEM 2260	ORGANIC CHEMISTRY II	3
CHEM 2274	ORGANIC CHEMISTRY LABORATORY	2
CHEM 2400 & CHEM 2404	QUANTITATIVE ANALYSIS and QUANTITATIVE ANALYSIS LAB	4
CHEM 2500	INTRODUCTION TO INORGANIC CHEMISTRY	3
CHEM 3350 & CHEM 3354	PHYSICAL CHEMISTRY I and PHYSICAL CHEMISTRY I LABORATORY	4
CHEM 3710	ESSENTIALS OF MEDICINAL CHEMISTRY	3
CHEM/BIOI 4650	BIOCHEMISTRY I (with the following lab)	3
CHEM/BIOI 4654	BIOCHEMISTRY I LABORATORY	1
<b>Additional Lecture</b>		
Select one of the following:		3-4
CHEM 3210	INTRODUCTION TO MOLECULAR MODELING (3 cr)	
CHEM 4230	ADVANCED ORGANIC CHEMISTRY - SYNTHESIS (3 cr)	
CHEM 4240	ADVANCED ORGANIC CHEMISTRY - MECHANISM (3 cr)	
CHEM 4250	ADVANCED ORGANIC CHEMISTRY: MECHANISM AND MODELING (4 cr)	
CHEM/BIOI 4660	BIOCHEMISTRY II (3 cr plus Biochemistry II Lab )	
<b>Additional Lab</b>		

Select one of the following:		1
CHEM 3424	SPECTROMETRIC CHARACTERIZATIONS (1 cr)	
CHEM/BIOI 4664	BIOCHEMISTRY II LABORATORY (1 cr)	
CHEM 4950	CHEMISTRY PROJECTS (1 cr)	
<b>Biology Requirements</b>		
BIOL 1450	BIOLOGY I	5
BIOL 2140	GENETICS	4
<b>Advanced Courses</b>		
Select 4 credit hours from advanced courses (listed below)		4
Total Credits		51-52

## Advanced Courses

Code	Title	Credits
<b>Analytical</b>		
CHEM 3030	ENVIRONMENTAL CHEMISTRY	3
CHEM 3414	INSTRUMENTAL METHODS	1
CHEM 3424	SPECTROMETRIC CHARACTERIZATIONS	1
CHEM 4400	INSTRUMENTAL ANALYSIS	3
CHEM 4404	INSTRUMENTAL ANALYSIS LABORATORY	1
<b>Biochemistry</b>		
CHEM/BIOI 4660	BIOCHEMISTRY II	3
CHEM/BIOI 4664	BIOCHEMISTRY II LABORATORY	1
CHEM 4670	PROTEIN PURIFICATION AND CHARACTERIZATION	2
<b>Inorganic</b>		
CHEM 3514	INORGANIC PREPARATIONS	1
CHEM 4500	ADVANCED INORGANIC CHEMISTRY	3
CHEM 4510	SOLID STATE INORGANIC CHEMISTRY	3
CHEM 4540	GEOCHEMISTRY	3
<b>Organic</b>		
CHEM 3210	INTRODUCTION TO MOLECULAR MODELING	3
CHEM 4230	ADVANCED ORGANIC CHEMISTRY - SYNTHESIS	3
CHEM 4240	ADVANCED ORGANIC CHEMISTRY - MECHANISM	3
CHEM 4250	ADVANCED ORGANIC CHEMISTRY: MECHANISM AND MODELING	4
<b>Physical Chemistry</b>		
CHEM 3360	PHYSICAL CHEMISTRY II	3
CHEM 3364	PHYSICAL CHEMISTRY II LABORATORY	1
<b>Polymer</b>		
CHEM 4310	POLYMER CHEMISTRY	3
<b>Research</b>		
CHEM 4950	CHEMISTRY PROJECTS	1
CHEM 4960	CHEMISTRY PROBLEMS	1-3
<b>Internship</b>		
CHEM 4810	CHEMISTRY INTERNSHIP	1-6
<b>Special Topics</b>		
CHEM 4930	SPECIAL TOPICS IN CHEMISTRY	1-3
<b>Biology</b>		
BIOL 3020	MOLECULAR BIOLOGY OF THE CELL	3
BIOL 3240	INTRODUCTION TO IMMUNOLOGY	3
BIOL 3830	BIOLOGY OF PATHOGENIC MICROORGANISMS	3
BIOL 4130	MOLECULAR GENETICS	4
BIOL 4140	CELLULAR BIOLOGY	4

BIOL 4450	VIROLOGY	3
BIOL 4640	MICROBIAL PHYSIOLOGY	4
BIOL 4730	VERTEBRATE ENDOCRINOLOGY	3
BIOL 4850	DEVELOPMENTAL BIOLOGY	3
BIOL 4860	COMPARATIVE GENOMICS	3

### Required Cognate Courses

Code	Title	Credits
MATH 1950	CALCULUS I	5
MATH 1960	CALCULUS II	5
<b>Select one of the following sequences:</b>		<b>10</b>
<b>Sequence I</b>		
PHYS 2110 & PHYS 1154	GENERAL PHYSICS I - CALCULUS LEVEL and GENERAL PHYSICS LABORATORY I	
PHYS 2120 & PHYS 1164	GENERAL PHYSICS-CALCULUS LEVEL and GENERAL PHYSICS LABORATORY II	
<b>Sequence II</b>		
PHYS 1110 & PHYS 1154	GENERAL PHYSICS I WITH ALGEBRA and GENERAL PHYSICS LABORATORY I	
PHYS 1120 & PHYS 1164	GENERAL PHYSICS and GENERAL PHYSICS LABORATORY II	
Total Credits		20

Code	Title	Credits
<b>Recommended but not required</b>		
MATH 1970	CALCULUS III	4

These courses can be applied to pre-professional curricula. For example, with proper selection of electives and sequencing of requirements, pre-pharmacy students may meet UNMC College of Pharmacy entrance requirements in three years and still be able to complete a B.S. in chemistry with a concentration in medicinal chemistry in four years.

To graduate with an ACS certified degree, see your chemistry advisor for proper course selection.