

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

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

- 46 hours of University General Education courses
- 39 hours of major courses
- 19 hours of other courses required for the major
- Elective hours as required to total 120 hours

TOTAL HOURS: 120 plus the optional 39 hour concentration

## Requirements

A Bachelor of Science Degree in chemistry with a concentration in education requires a minimum of 39 credits of course work in chemistry and a minimum of 39 credits in the College of Education, Health, and Human Sciences.

Code	Title	Credits
<b>Chemistry Requirements</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 & CHEM 2274	ORGANIC CHEMISTRY II and ORGANIC CHEMISTRY LABORATORY	5
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 3360	PHYSICAL CHEMISTRY II	3
CHEM/BIO 4650	BIOCHEMISTRY I (with the following lab)	3
CHEM/BIO 4654	BIOCHEMISTRY I LABORATORY	1
<b>Advanced Courses</b>		
Select 5 credit hours from advanced courses (listed below)		5
<b>Total Credits</b>		<b>39</b>

Code	Title	Credits
<b>Advanced Courses</b>		
<b>Analytical</b>		
CHEM 3030	ENVIRONMENTAL CHEMISTRY	3
CHEM 3424	SPECTROMETRIC CHARACTERIZATIONS	1
CHEM 4400	INSTRUMENTAL ANALYSIS	3
CHEM 4404	INSTRUMENTAL ANALYSIS LABORATORY	1
<b>Biochemistry</b>		
CHEM/BIO 4660	BIOCHEMISTRY II	3
CHEM/BIO 4664	BIOCHEMISTRY II LABORATORY	1

CHEM 4670	PROTEIN PURIFICATION AND CHARACTERIZATION	2
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### Inorganic

CHEM 3514	INORGANIC PREPARATIONS	1
CHEM 4500	ADVANCED INORGANIC CHEMISTRY	3
CHEM 4510	SOLID STATE INORGANIC CHEMISTRY	3
CHEM 4540	GEOCHEMISTRY	3

### Medicinal

CHEM 3710	ESSENTIALS OF MEDICINAL CHEMISTRY	3
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### Nuclear

CHEM 4320	NUCLEAR CHEMISTRY	3
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### Organic

CHEM 3210	INTRODUCTION TO MOLECULAR MODELING	3
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CHEM 4230	ADVANCED ORGANIC CHEMISTRY - SYNTHESIS	3
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CHEM 4240	ADVANCED ORGANIC CHEMISTRY - MECHANISM	3
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CHEM 4250	ADVANCED ORGANIC CHEMISTRY: MECHANISMS AND MODELING	4
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### Physical

CHEM 3364	PHYSICAL CHEMISTRY II LABORATORY	1
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### Polymer

CHEM 4310	POLYMER CHEMISTRY	3
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### Research

CHEM 4950	CHEMISTRY PROJECTS	1
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CHEM 4960	CHEMISTRY PROBLEMS	1-3
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### Internship

CHEM 4810	CHEMISTRY INTERNSHIP	1-6
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### Special Topics

CHEM 4930	SPECIAL TOPICS IN CHEMISTRY	1-3
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## Educator Preparation Program Requirements

Code	Title	Credits
SPED 3800	DIFFERENTIATION AND INCLUSIVE PRACTICES	3
TED 2100	EDUCATIONAL FOUNDATIONS	3
TED 2200	HUMAN RELATIONS FOR BIAS-FREE CLASSROOMS	3
TED 2380	DEVELOPMENT AND LEARNING IN ADOLESCENCE	3
TED 2400	PLANNING FOR EFFECTIVE TEACHING	6
TED 3550	SECONDARY CLASSROOM MANAGEMENT	3
TED 3690	LITERACY AND LEARNING	3
TED 4000	SPECIAL METHODS IN THE CONTENT AREA	3
TED 4600	CLINICAL PRACTICE AND SEMINAR: ELEMENTARY OR SECONDARY LEVEL	12

**Total Credits** 39

## Required Cognate Courses

Code	Title	Credits
MATH 1950	CALCULUS I	5
MATH 1960	CALCULUS II	4

**Select one of the following sequences:** 10

Sequence I		
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	
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**Sequence II**

PHYS 1110 & PHYS 1154	GENERAL PHYSICS I and GENERAL PHYSICS LABORATORY I	
PHYS 1120 & PHYS 1164	GENERAL PHYSICS II and GENERAL PHYSICS LABORATORY II	

**Total Credits** **19**

**Additional Information**

To graduate certified to teach high school chemistry, a biology and geology course are required. BIOL 1450 is required and CHEM 4540/GEOL 1104 are recommended.

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

**Freshman****Fall** **Credits**

CHEM 1180 & CHEM 1184	GENERAL CHEMISTRY I and GENERAL CHEMISTRY I LABORATORY (*)	4
ENGL 1150	ENGLISH COMPOSITION I (**)	3
MATH 1950	CALCULUS I (***)	5
CMST 1110 or CMST 2120	PUBLIC SPEAKING FUNDS or ARGUMENTATION AND DEBATE	3

\*CHEM: Please see the catalog for the most up-to-date Chemistry course pre-requisites.

\*\*ENGL 1150: Requires placement via AP, ACT, or EPPE.

\*\*\*MATH 1950: Requires placement. MATH 1950 is part of the B.S. cognate

**Credits** **15**

**Spring**

CHEM 1190 & CHEM 1194	GENERAL CHEMISTRY II and GENERAL CHEMISTRY II LABORATORY (*)	4
MATH 1960	CALCULUS II (**)	4
TED 2100	EDUCATIONAL FOUNDATIONS (***)	3
TED 2200	HUMAN RELATIONS FOR BIAS-FREE CLASSROOMS (***)	3

\*CHEM: Please see the catalog for the most up-to-date Chemistry pre-requisites.

\*\*MATH 1960: Requires MATH 1950. MATH 1960 is part of the B.S. cognate

\*\*\*TED 2100 & 2200- Requires 2.5 cumulative GPA

**Credits** **14**

**Summer**

ENGL 1160	ENGLISH COMPOSITION II (*)	3
PHYS 2110 or PHYS 1110	GENERAL PHYSICS I - CALCULUS LEVEL (**) or GENERAL PHYSICS I	4
PHYS 1154	GENERAL PHYSICS LABORATORY I (**)	1

\*ENGL 1160: Requires ENGL 1150 or placement.

\*\*PHYS 2110: Requires MATH 1950; PHYS 1110 Requires MATH 1220. PHYS 2110/1110 & 1154 are part of the BS cognate

**Credits** **8**

**Sophomore****Fall**

CHEM 2250	ORGANIC CHEMISTRY I (*)	3
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CHEM 2400 & CHEM 2404	QUANTITATIVE ANALYSIS and QUANTITATIVE ANALYSIS LAB (**)	4
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Social Science 3

Social Science 3

\*CHEM 2250: Please see the catalog for the most up-to-date prerequisites.

\*\*CHEM 2400: Requires CHEM 1190 and CHEM 1194 with a grade of C- or better. CHEM 2404 must be taken concurrently.

**Credits** **13**

**Spring**

CHEM 2260 & CHEM 2274	ORGANIC CHEMISTRY II and ORGANIC CHEMISTRY LABORATORY (*)	5
TED 2380	DEVELOPMENT AND LEARNING IN ADOLESCENCE (**)	3
TED 2400	PLANNING FOR EFFECTIVE TEACHING (**)	6

Humanities/Fine Arts & US Diversity Course 3

\*CHEM 2260: Please see the catalog for the most up-to-date prerequisites.

\*\*TED 2380 and 2400: Formal admission to COE teacher prep program required. TED 2380 and 2400 must be taken concurrently.

**Credits** **17**

**Summer**

PHYS 2120 or PHYS 1120	GENERAL PHYSICS-CALCULUS LEVEL (*) or GENERAL PHYSICS II	4
PHYS 1164	GENERAL PHYSICS LABORATORY II (*)	1
Humanities and Fine Arts		3

\*PHYS 2120: Requires MATH 1960 and PHYS 2110.  
PHYS 1120: Requires MATH 1220 and PHYS 1110.  
PHYS 2120/1120 and 1164 are part of the B.S. cognate.

**Credits** **8**

**Junior****Fall**

BIOL 1450	BIOLOGY I	5
CHEM 3350 & CHEM 3354	PHYSICAL CHEMISTRY I and PHYSICAL CHEMISTRY I LABORATORY (*)	4
CHEM 4650 & CHEM 4654	BIOCHEMISTRY I and BIOCHEMISTRY I LABORATORY (**)	4
Humanities/Fine Arts***		3

\*CHEM 3350: Please see the catalog for the most up-to-date prerequisites.

\*\*CHEM 4650: Requires CHEM 2260 & 2274; and either CHEM 2400 or BIOL 3020, all with a C- or better. CHEM 4654 must be taken concurrently.

\*\*\*HFA course must come from 2nd discipline.

**Credits** **16**

**Spring**

CHEM 2500	INTRODUCTION TO INORGANIC CHEMISTRY (*)	3
CHEM 3360	PHYSICAL CHEMISTRY II (**)	3
TED 3550	SECONDARY CLASSROOM MANAGEMENT (***)	3
TED 3690	LITERACY AND LEARNING (^)	3
Advanced Chemistry Elective(s) towards the requisite additional 5 credit hours#		1-4

\*CHEM 2500: Requires CHEM 1190 with a grade of C- or better.

\*\*Transfer credit or placement exam scores may change suggested plan of study

\*\*CHEM 3360: Requires CHEM 3350 & 3354 with a grade of C- or better.

\*\*\*TED 3550: Requires TED 2400; co-requisite TED 3690; 2.75 NU GPA and passing Praxis CORE scores (Math, Reading, and Writing)

^TED 3690: Requires TED 2400; co-requisite TED 3550. 2.75 NU GPA and passing Praxis CORE scores (Math, Reading, and Writing)

#Please refer to the catalog for Advanced Chemistry Elective options.

<b>Credits</b>		<b>13-16</b>
<b>Senior</b>		
<b>Fall</b>		
GEOL 1170	INTRODUCTION TO PHYSICAL GEOLOGY	4
SPED 3800	DIFFERENTIATION AND INCLUSIVE PRACTICES (*)	3
TED 4000	SPECIAL METHODS IN THE CONTENT AREA (**)	3
Advanced Chemistry Elective***		1-3
Social Science / Global Diversity^		3
*SPED 3800: Requires TED 2400; Minimum 2.75 GPA.		
**TED 4000: Requires TED 3690 and TED 3550 prior. 2.75 NU GPA and passing Praxis CORE scores (Math, Reading, and Writing)		
***Please see catalog for Advanced Chemistry Elective options.		
^Social Science must be from 2nd discipline.		
<b>Credits</b>		<b>14-16</b>
<b>Spring</b>		
TED 4600	CLINICAL PRACTICE AND SEMINAR: ELEMENTARY OR SECONDARY LEVEL (*)	12
*TED 4600: Candidates must complete all coursework, have a minimum cumulative GPA of 2.75, passing Praxis CORE scores (Math, Reading, and Writing), and be accepted into Clinical Practice. All other degree requirements must be completed by this point. Cannot take any courses alongside TED 4600 Clinical Practice.		
<b>Credits</b>		<b>12</b>
<b>Total Credits</b>		<b>130-135</b>

This roadmap is a suggested plan of study and does not replace meeting with an advisor. Please note that students may need to adjust the actual sequence of courses based on course availability. Please consult an advisor in your major program for further guidance.

This plan is not a contract and curriculum is subject to change

#### **Additional Information About this Plan:**

**University Degree Requirements:** The minimum number of hours for a UNO undergraduate degree is 120 credit hours. Please review the requirements for your specific program to determine all requirements for the program. In order to graduate on-time (four years for an undergraduate degree), you need to take 30 hours each year.

**Placement Exams:** For Math, English, Foreign Language, a placement exam may be required. More information on these exams can be found at <https://www.unomaha.edu/enrollment-management/testing-center/placement-exams/information.php>