

# Chemistry - Teaching B.A.

## Chemistry - Teaching Major

The B.A. Chemistry - Teaching major requires a minimum of 120 total hours to graduate. This total includes UNIFI/General Education requirements, the Professional Experiences requirements, Educator Essentials requirements, and the following specified major requirements, to complete the minimum of 120 hours.

This program provides preparation for chemistry teachers with successful completion leading to recommendation for State of Iowa licensure in endorsement #152 5-12 Chemistry. Coursework that leads to additional endorsements is recommended and should be selected in consultation with your advisor.

### Required

Mathematics:		
MATH 1420	Calculus I *	4
Chemistry and Biochemistry:		
CHEM 1110 & CHEM 1120	General Chemistry I and General Chemistry II (*)	8
CHEM 2010	Chemical Safety Seminar	1
CHEM 2040	Applied Organic and Biochemistry	4
CHEM 2110	Descriptive Inorganic Chemistry	4
CHEM 2320	Chemical Analysis	3
CHEM 2330	Chemical Analysis Laboratory	2
CHEM 4420/5420	Physical Chemistry I	3
Physics: 8		
Select one of the following:		
PHYSICS 1511 & PHYSICS 1512	General Physics I and General Physics II	
or		
PHYSICS 1701 & PHYSICS 1702	Physics I for Science and Engineering and Physics II for Science and Engineering	
<b>Total Hours</b>		<b>37</b>

\* Has prerequisite of satisfactory score on ALEKS exam or subsequent remediation.

### Notes:

- Well-prepared students may substitute *CHEM 1130* for CHEM 1110 and CHEM 1120 ; these students must also substitute CHEM 2210 and CHEM 2230 and CHEM 2220 for CHEM 2040.

## Professional Experiences

Required:		
EDUC 2385	Teaching Methods I: Secondary Science *,**	3
EDUC 2485	Teaching Internship I: Secondary Science	3

EDUC 3585/5585	Teaching Methods II: Secondary Science *	3
EDUC 3685/5685	Teaching Internship II: Secondary Science	3
EDUC 4138	Secondary School Teaching	12
<b>Total Hours</b>		<b>24</b>

\* A grade of C (2.00) or higher is required for all Methods courses.

\*\*Chemistry Teaching majors can count EDUC 2385 Teaching Methods I: Secondary Science for category 5 of Educator Essentials.

## Educator Essentials

Required: \*

Select one of the following in each category:

<b>Category 1: The Learner</b>		<b>3</b>
EDPSYCH 1500	Reflections on Learning	
EDPSYCH 2068	Development and Learning in Sociocultural Contexts	
EDPSYCH 2100	Creativity and Higher Order Thinking in the Classroom	
SOCFOUND 2243	Rethinking the Learning Society: Education and Its Future(s)	
<b>Category 2: Social Contexts of Learning</b>		<b>3</b>
SOCFOUND 2119	Social & Cultural Foundations of Education	
SOCFOUND 2134	A Modern History of Education in the United States	
SOCFOUND 2334	Education Policy and Politics of Education	
TESOL 2015	Language Today	
<b>Category 3: Education for All</b>		<b>3</b>
KINES 4152	Adapted Physical Education	
SOCFOUND 3334	Education, Power, and Change	
SOCFOUND 3434	Social Movements and Education	
SPIE 3140	Interdisciplinary and Intersectional Study of Education for All	
SPIE 3150	Meeting the Needs of Diverse Learners in Classrooms	
TESOL 3710	Content Area Strategies for English Language Learners	
<b>Category 4: The Classroom Environment</b>		<b>3</b>
EDPSYCH 3200	Deeper Motivation and the Highly Engaged Classroom	
EDPSYCH 3300	Level Up: Gamified Learning Environments	
ECIE 4151	Early Childhood Curriculum Development and Organization	

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RTNL 3360	Playful Learning and Project-Based Experiences: Techniques for Ed and Recreational Environments	
SOCFOUND 3219	Critical Perspectives on Technology and Education	
<b>Category 5: Effective Pedagogy</b>		<b>3</b>
ARTED 4600	Expressive Learning Assessment	
LRNTECH 3600	Technology, Pedagogy, and Learning in the Digital Age	
MEASRES 3510	Assessment for Learning	
TEACHING 3500	Effective Teaching through Differentiation, Technology and Assessment	
<b>Category 6: The Professional Educator</b>		<b>3</b>
ECIE 3149	Child, Family, School and Community Relationships	
SOCFOUND 3519	Teacher Leadership & Educational Change	
TEACHING 3177	Collaborative Partnerships for Educators	
<b>Total Hours</b>		<b>18</b>

\* A grade of C (2.00) or higher is required in each Educator Essentials course.

## Four-Year Plan

### Chemistry Teaching, B.A.

This is a sample plan of study with a suggested sequencing of classes for the major. University electives may be applied to earn additional academic majors, minors, or certificates. Students should regularly meet with their academic advisor to plan their specific semester schedule to include UNIFI/General Education program and/or university elective hours required.

Course	Title	Hour
<b>Freshman</b>		
<b>Fall</b>		
CHEM 1110	General Chemistry I	4
MATH 1140	Precalculus	4
ENGLISH 1005	College Writing and Research	3
UNIFI/General Education or University Electives		3
<b>Hours</b>		<b>14</b>
<b>Spring</b>		
CHEM 1120	General Chemistry II	4
MATH 1420	Calculus I	4
COMM 1000	Oral Communication	3
Educator Essentials Course		3
<b>Hours</b>		<b>14</b>
<b>Sophomore</b>		
<b>Fall</b>		
CHEM 2040	Applied Organic and Biochemistry	4
CHEM 2320	Chemical Analysis	3
PHYSICS 1511	General Physics I	4
Educator Essentials Course		3

UNIFI/General Education or University Electives		3
<b>Hours</b>		<b>17</b>
<b>Spring</b>		
CHEM 2010	Chemical Safety Seminar	1
CHEM 2330	Chemical Analysis Laboratory	2
PHYSICS 1512	General Physics II	4
EDUC 2385	Teaching Methods I: Secondary Science	3
EDUC 2485	Teaching Internship I: Secondary Science	3
UNIFI/General Education or University Electives		3
<b>Hours</b>		<b>16</b>
<b>Junior</b>		
<b>Fall</b>		
CHEM 2110	Descriptive Inorganic Chemistry	4
Educator Essentials Course		3
UNIFI/General Education or University Electives		9
<b>Hours</b>		<b>16</b>
<b>Spring</b>		
Educator Essentials Courses		6
UNIFI/General Education or University Electives		9
<b>Hours</b>		<b>15</b>
<b>Senior</b>		
<b>Fall</b>		
CHEM 4420/5420	Physical Chemistry I	3
EDUC 3585/5585	Teaching Methods II: Secondary Science	3
EDUC 3685/5685	Teaching Internship II: Secondary Science	3
UNIFI/General Education or University Electives		7
<b>Hours</b>		<b>16</b>
<b>Spring</b>		
EDUC 4138	Secondary School Teaching	12
<b>Hours</b>		<b>12</b>
<b>Total Hours</b>		<b>120</b>

## Learning Outcomes

### Chemistry Teaching, B.A.

**University Goal:** Communication

- **Program Goal 1:** Students will be able to effectively communicate chemical information to colleagues and the public
  - **Outcome 1:** Students will be able to prepare and produce scientific written communications using standard chemistry style and format.
  - **Outcome 2:** Students will be able to prepare and deliver an oral presentation on chemical topics.

**University Goal:** Content Knowledge

- **Program Goal 2:** Students will apply chemical knowledge.
  - **Outcome 3:** Students will demonstrate proficient knowledge and application of chemistry content.

**University Goal:** Critical Thinking

- **Program Goal 3:** Students will demonstrate the skills needed to successfully conduct experiments and analyze data.
  - **Outcome 4:** Students will conduct experimental measurements and evaluate the accuracy and reliability of data.

## Related Programs

- Biology - Teaching Minor
- Mathematics - Teaching Minor