

# CHEMISTRY COMPREHENSIVE MAJOR: SECONDARY LICENSURE EMPHASIS (WITH A 3+2 MASTER OF ARTS IN EDUCATION)

The 3+2 Secondary and K-12 Licensure Program allows students to complete a B.A. in their academic major with an emphasis in Secondary and K-12 Licensure and a Master of Arts in Education in five years. Students apply to the program by December of their junior year. MUS majors interested in the program need to set up an individualized plan with their MUS and EDUC advisors. To be accepted into the 3+2 Program, each student must:

- Provide letters of recommendation from at least one Education Department faculty member and one faculty member from the student's major
- Prove content, as defined by the Colorado Department of Education
- Be accepted into Western's Teacher Licensure Program
- Successfully complete EDUC 340 (by Spring of junior year)
- Be on track to complete all coursework required within the academic major

Upon satisfactory completion of these requirements, students will be designated as "MAED candidates with provisional acceptance." Upon completion of the final undergraduate credits for the Western B.A., students will be designated as "MAED degree-seeking students." Students who have completed all other requirements of the 3+2 Secondary and K-12 Licensure Degree Program and all Western undergraduate requirements, yet choose to leave the MAED program before Year Five, will still have completed the BA in Secondary and K-12 Licensure, have earned 120 credits necessary for a Western undergraduate degree, and be eligible to apply for initial teacher licensure.

## Program Requirements

Students interested in pursuing this comprehensive program should consult with the Teacher Education Program advisor in addition to the advisor in their major as soon as possible.

Code	Title	Credits
<b>Chemistry Nucleus</b>		
CHEM 111	General Chemistry I (GT-SC2)	3
CHEM 112	General Chemistry Laboratory I (GT-SC1)	1
CHEM 113	General Chemistry II	3
CHEM 114	General Chemistry Laboratory II	1
CHEM 302	Chemical Information Literacy and Communication	3
CHEM 306	Analytical Chemistry (with laboratory)	4
CHEM 331	Organic Chemistry I	3
CHEM 332	Organic Chemistry II	3
CHEM 334	Organic Chemistry Laboratory I	1
CHEM 335	Organic Chemistry Laboratory II	1
CHEM 451	Physical Chemistry I	3
<b>Total Credits</b>		<b>26</b>

In addition, the student must fulfill the requirements of the Secondary Licensure 3+2 Program ([https://catalog.western.edu/undergraduate/programs/education/elementary-education-comprehensive-secondary-k-12-licensure-3\\_2/](https://catalog.western.edu/undergraduate/programs/education/elementary-education-comprehensive-secondary-k-12-licensure-3_2/)) (see description under Education), and the following:

Code	Title	Credits
BIOL 150	Biological Principles (with laboratory) (GT-SC1)	4
BIOL 151	Diversity and Patterns of Life (with laboratory)	4
BIOL 301	General Ecology	3
GEOL 101	Physical Geology (GT-SC2)	3
GEOL 105	Physical Geology Laboratory (GT-SC1)	1
GEOL 201	Historical Geology (with laboratory)	4
MATH 151	Calculus I (GT-MA1)	4
MATH 251	Calculus II	4
PHYS 110	Introductory Astronomy (GT-SC2)	3
PHYS 120	Meteorology (GT-SC2)	3
PHYS 190 & PHYS 185	General Physics I (GT-SC2) and Laboratory Physics I (GT-SC1)	4
PHYS 191 & PHYS 186	General Physics II (GT-SC2) and Laboratory Physics II (GT-SC1)	4

Course	Title	Credits
<b>Year One</b>		
<b>Fall</b>		
CHEM 111	General Chemistry I (GT-SC2)	3
CHEM 112	General Chemistry Laboratory I (GT-SC1)	1
ENG 102	Writing and Rhetoric I (GFC01)	3
Gen Ed	Arts & Humanities	3
Gen Ed	Social Sciences	3
HWTR 100	First Year Seminar	1
MATH 140	College Algebra (GT-MA1)	3
<b>Credits</b>		<b>17</b>

<b>Spring</b>		
CHEM 113	General Chemistry II	3
CHEM 114	General Chemistry Laboratory II	1
ENG 103	Writing and Rhetoric II (GT-CO2)	3
Gen Ed	Arts & Humanities	3
Gen Ed	Social Sciences	3
MATH 141	Precalculus (GT-MA1)	4
<b>Credits</b>		<b>17</b>

<b>Year Two</b>		
<b>Fall</b>		
BIOL 150	Biological Principles (with laboratory) (GT-SC1)	4
CHEM 306	Analytical Chemistry (with laboratory)	4
CHEM 331	Organic Chemistry I	3
CHEM 334	Organic Chemistry Laboratory I	1
Gen Ed	Arts & Humanities	3
MATH 151	Calculus I (GT-MA1)	4
<b>Credits</b>		<b>19</b>

<b>Spring</b>		
BIOL 151	Diversity and Patterns of Life (with laboratory)	4
CHEM 302	Chemical Information Literacy and Communication	3
CHEM 332	Organic Chemistry II	3
CHEM 335	Organic Chemistry Laboratory II	1
Gen Ed	Social Sciences	3
MATH 251	Calculus II	4
<b>Credits</b>		<b>18</b>

<b>Year Three</b>		
<b>Fall</b>		
BIOL 301	General Ecology	3

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CHEM 451	Physical Chemistry I	3
GEOL 101	Physical Geology (GT-SC2)	3
GEOL 105	Physical Geology Laboratory (GT-SC1)	1
PHYS 120	Meteorology (GT-SC2)	3
PHYS 190	General Physics I (GT-SC2)	3
PHYS 185	Laboratory Physics I (GT-SC1)	1
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
EDUC 000	Education Gateway Course	0
EDUC 340	Application of Pedagogy and Practice	3
GEOL 201	Historical Geology (with laboratory)	4
PHYS 110	Introductory Astronomy (GT-SC2)	3
PHYS 191	General Physics II (GT-SC2)	3
PHYS 186	Laboratory Physics II (GT-SC1)	1
<b>Credits</b>		<b>14</b>
<b>Year Four</b>		
<b>Fall</b>		
EDUC 403	Instruction & Assessment in Content Area	3
EDUC 405	Data-driven Instructional Practices	3
EDUC 604	Learning Environments	3
EDUC 609	Secondary Student Teaching	3
EDUC 624	Managing to Differentiate	3
<b>Credits</b>		<b>15</b>
<b>Spring</b>		
EDUC 606	Reading and Writing Across the Content Areas	3
EDUC 607	Rethinking Learning in the 21st Century	3
EDUC 609	Secondary Student Teaching	3
EDUC 629	Inclusion and English Learners	3
<b>Credits</b>		<b>12</b>
<b>Total Credits</b>		<b>129</b>