

# CHEMISTRY AND BIOCHEMISTRY—CHEMISTRY MAJOR, BACHELOR OF ARTS (BA)

This program features less concentration in chemistry than the bachelor of science and is not intended to prepare students for employment as a professional chemist.

Note:

- two years of a single high school world language or one year of a single college-level world language is required;
- a minor is advised but not required for this option.

**Grade Requirements:** due to the cumulative nature of chemistry courses, the department strongly recommends that students receive a grade  $\geq$ C in all prerequisite chemistry courses.

## Required Courses

CHEM 171 & 171L & CHEM 172 & CHEM 172L & CHEM 173 & CHEM 173L	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LABORATORY I and GENERAL CHEMISTRY II and GENERAL CHEMISTRY LABORATORY II and GENERAL CHEMISTRY III and GENERAL CHEMISTRY LABORATORY III	15
CHEM 304 & 304L	QUANTITATIVE ANALYSIS and QUANTITATIVE ANALYSIS LAB	6
CHEM 351	ORGANIC CHEMISTRY	4
CHEM 352	ORGANIC CHEMISTRY	4
CHEM 353	ORGANIC CHEMISTRY	3
CHEM 372	ORGANIC CHEMISTRY LABORATORY I	3
CHEM 421	PHYSICAL CHEMISTRY	4
CHEM 422	PHYSICAL CHEMISTRY	4
CHEM 431	PHYSICAL CHEMISTRY LABORATORY	1
CHEM 432	PHYSICAL CHEMISTRY LABORATORY	2

## Required Supporting Courses

MATH/HONS 161	CALCULUS I	5
MATH 162	CALCULUS II	5
MATH 163	CALCULUS III	5
PHYS 151	GENERAL PHYSICS I	4
PHYS 152	GENERAL PHYSICS II	4
PHYS 153	GENERAL PHYSICS III	4
PHYS 161	MECHANICS LABORATORY	1
PHYS 162	HEAT AND OPTICS LABORATORY	1
PHYS 163	ELECTRONICS LABORATORY I	1

**Electives—choose 300–level or above Chemistry and Biochemistry courses** 4

**Suggested Supporting Course—see your chemistry/biochemistry advisor.**

Completion of a computer programming course is strongly recommended.

## Required Capstone

CHEM 491 or CHEM 490	SENIOR THESIS ADVANCED INORGANIC CHEMISTRY OR SENIOR CAPSTONE	5
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**Total Credits**

**85**

## Plan of Study

The following plan of study is for a student with zero credits. Individual students may have different factors such as: credit through transfer work, Advanced Placement, Running Start, or any other type of college-level coursework that requires an individual plan.

Courses may be offered in different terms and not all courses are offered every term, checking the academic schedule is paramount in keeping an individual plan current. There may be some courses that have required prerequisites not listed in the plan, review the course descriptions for information. **Students should connect with an advisor to ensure they are on track to graduate.**

All Undergraduate students are required to meet the Undergraduate Degree Requirements (<http://catalog.ewu.edu/undergraduate-degree/>).

This major requires the completion of the World Language requirement (<http://catalog.ewu.edu/undergraduate-degree/#worldlanguagetext>). Students pursuing a Bachelor of Arts (BA) degree must complete two years of a single language in high school or one year of a single language in college.

<b>First Year</b>			
<b>Fall Quarter</b>	<b>Credits</b>	<b>Winter Quarter</b>	<b>Credits</b>
CHEM 171 & 171L (Natural Science BACR 1)		5 CHEM 172 & 172L (Natural Science BACR 2)	
ENGL 101		5 ENGL 201	
MATH 161		5 MATH 162	
		5 CHEM 173 & 173L	
		5 MATH 163	
		5 Humanities & Arts BACR 1 <sup>1</sup>	
	<b>15</b>	<b>15</b>	<b>15</b>
<b>Second Year</b>			
<b>Fall Quarter</b>	<b>Credits</b>	<b>Winter Quarter</b>	<b>Credits</b>
CHEM 304 & 304L		6 PHYS 152 & PHYS 162	
PHYS 151 & PHYS 161		5 Diversity - graduation requirement <sup>1</sup>	
Social Science BACR 1 <sup>1</sup>		5 Elective - certificate, minor, or general elective	
		5 PHYS 153 & PHYS 163	
		5 Humanities & Arts BACR 2 <sup>1</sup>	
		5 Social Science BACR 2 <sup>1</sup>	
	<b>16</b>	<b>15</b>	<b>15</b>
<b>Third Year</b>			
<b>Fall Quarter</b>	<b>Credits</b>	<b>Winter Quarter</b>	<b>Credits</b>
CHEM 351		4 CHEM 352	
Global Studies - graduation requirement <sup>1</sup>		5 CHEM 372	
Elective - certificate, minor, or general elective		5 Elective - certificate, minor, or general elective	
Elective - certificate, minor, or general elective		2 Elective - certificate, minor, or general elective	
		4 CHEM 353	
		3 Chemistry Elective <sup>2</sup>	
		4 Elective - certificate, minor, or general elective	
		3 Elective - certificate, minor, or general elective	
	<b>16</b>	<b>14</b>	<b>15</b>
<b>Fourth Year</b>			
<b>Fall Quarter</b>	<b>Credits</b>	<b>Winter Quarter</b>	<b>Credits</b>
CHEM 421		4 CHEM 422	
CHEM 431		1 CHEM 432	
Elective - certificate, minor, or general elective		5 Elective - certificate, minor, or general elective	
Elective - certificate, minor, or general elective		4 Elective - certificate, minor, or general elective	
		4 CHEM 490 or 491 (Senior Capstone - graduation requirement)	
		2 Elective - certificate, minor, or general elective	
		5 Elective - certificate, minor, or general elective	
		4	
	<b>14</b>	<b>15</b>	<b>15</b>
<b>Total Credits 180</b>			

<sup>1</sup> University Graduation Requirements (UGR) and Breadth Area Course Requirements (BACR) courses may be less than 5 credits and additional credits may be required to reach the required 180 total credits needed to graduate. Students should connect with an advisor to ensure they are on track to graduate.

<sup>2</sup> Electives—choose 300–level or above Chemistry and Biochemistry course.

### University Competencies and Proficiencies

English (<http://catalog.ewu.edu/undergraduate-degree/#newitemtext>)

Quantitative and Symbolic Reasoning (<http://catalog.ewu.edu/undergraduate-degree/#mathcompproficienciestext>)

Placement and Clearance (<http://catalog.ewu.edu/placement/>)

Prior Learning/Sources of Credit AP, CLEP, IB (<http://catalog.ewu.edu/prior-learning/>)

### General Education Requirements (<http://catalog.ewu.edu/undergraduate-degree/#generaleducationrequirementstext>) (GER)

- Minimum Credits—180 cumulative credit hours
  - 60 upper-division credits (300 level or above)
  - 45 credits in residence (attendance) at Eastern, with at least 15 upper-division credits in major in residence at Eastern
- Minimum Cumulative GPA  $\geq 2.0$

**Breadth Area Core Requirements (BACR)**

Humanities and Arts (<http://catalog.ewu.edu/undergraduate-degree/#humanitiesandfineartsgectext>)  
 Natural Sciences (<http://catalog.ewu.edu/undergraduate-degree/#naturalsciencesgectext>)  
 Social Sciences (<http://catalog.ewu.edu/undergraduate-degree/#socialsciencessgectext>)

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**University Graduation Requirements (<http://catalog.ewu.edu/undergraduate-degree/#universitygraduationrequirementstext>) (UGR)**

Diversity Course List (<http://catalog.ewu.edu/undergraduate-degree/#cultureandgenderdiversityintheuslisttext>)  
 World Language (<http://catalog.ewu.edu/undergraduate-degree/#worldlanguagetext>) (for Bachelor of Arts)  
 Global Studies Course List (<http://catalog.ewu.edu/undergraduate-degree/#internationalstudiesrequirementtext>)  
 Minor or Certificate (<http://catalog.ewu.edu/undergraduate-degree/#majorminororcertificateugrtext>)  
 Senior Capstone Course List (<http://catalog.ewu.edu/undergraduate-degree/#capstonecourselisttext>)

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Application for Graduation (use EagleNET (<https://inside.ewu.edu/eaglenet/>)) must be made at least two terms in advance of the term you expect to graduate (undergraduate and post-baccalaureate).

Use the Catalog Archives (<http://catalog.ewu.edu/archives/>) to determine *two important catalog years*.

Requirements in Degree Works (<https://inside.ewu.edu/records-and-registration/degree-works/>) are based on these two catalog years:

- a. The catalog *in effect at the student's first term* of current matriculation is used to determine **BACR** (Breadth Area Credit Requirements) **and** **UGR** (Undergraduate Graduation Requirements).
- b. The catalog *in effect at the time the student declares a major or minor* is used to determine the program requirements.

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**Students who earn a BA in Chemistry/Biochemistry—Chemistry from EWU should be able to:**

- demonstrate a knowledge of major concepts in the areas of inorganic, organic; analytical, and physical chemistry;
- demonstrate sufficient preparation in chemistry to successfully compete in a science-related career;
- demonstrate a capacity to use modern instrumentation and classical techniques for the analysis and/or separation of chemicals and an ability to interpret data;
- demonstrate effective oral and written communication skills and critical thinking skills as related to the field of chemistry;
- demonstrate knowledge of safe practices in the handling, usage and disposal of chemicals.