CHEMISTRY/BIOCHEMISTRY MAJOR WITH BIOCHEMISTRY OPTION, BACHELOR OF SCIENCE (BS)

This program is recommended for students planning to go directly into professional fields of biochemistry, for students planning to attend graduate school in biochemistry, molecular biology or pharmacology and for students planning to enter professional schools such as medicine, veterinary medicine or pharmacy.

Note: the option will require more than 12 terms (or 4 years) to complete at an average of 15 credits per term.

Grade Requirements: due to the cumulative nature of chemistry courses, the department strongly recommends that students receive a grade ≥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	QUANTITATIVE ANALYSIS	6
CHEM 351	ORGANIC CHEMISTRY	4
CHEM 352	ORGANIC CHEMISTRY	4
CHEM 353	ORGANIC CHEMISTRY	3
CHEM 372	ORGANIC CHEM LABORATORY I	3
CHEM 421	PHYSICAL CHEMISTRY	4
CHEM 422	PHYSICAL CHEMISTRY	4
CHEM 431	PHYSICAL CHEMISTRY LABORATORY	1
CHEM 480	BIOCHEMISTRY	5
CHEM 481	INTERMEDIARY METABOLISM	5
CHEM 482	INTEGRATED TOPICS IN BIOCHEMISTRY AND BIOPHYSICS	3
CHEM 483	BIOCHEMISTRY LABORATORY 1	2
Choose one of the following three courses		**3-5**
CHEM 319	MODERN INORGANIC CHEMISTRY	
CHEM 420	INSTRUMENTAL ANALYSIS	
CHEM 432	PHYSICAL CHEMISTRY LABORATORY	
Choose one or more of these courses		**2-3**
BIOL 371	PRE-MEDICAL, DENTAL, VETERINARY AND PHARMACY PREPARATION	
CHEM 371	PRE-MEDICAL, DENTAL, VETERINARY AND PHARMACY PREPARATION	
CHEM 373	ORGANIC CHEM LABORATORY II	
CHEM 484	BIOCHEMISTRY LABORATORY 2	
Choose one of the following three courses		**4**
CHEM 395	INTERNSHIP	
CHEM 498	SEMINAR	
CHEM 499	DIRECTED STUDY	

Required Supporting Courses		
BIOL 171	BIOLOGY I	5
BIOL 172	BIOLOGY II	5
BIOL 173	BIOLOGY III	5
BIOL 310	FUNDAMENTALS OF GENETICS	5
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
Suggested—a computer programming course is strongly recommended. See your chemistry/biochemistry advisor.		
Suggested supporting courses for Pre-Med/Pre-Dent/Pre-Vet students		
BIOL 270	BIOLOGICAL INVESTIGATION	
BIOL 301	MICROBIOLOGY	
BIOL 334	HUMAN ANATOMY AND PHYSIOLOGY III	
PHIL 445	BIOMEDICAL ETHICS	
TCOM 205	INTRODUCTION TO TECHNICAL COMMUNICATION	
Required Capstone		
CHEM 491	SENIOR THESIS	4-6
or CHEM 490	ADVANCED INORGANIC CHEMISTRY OR SENIOR CAPSTONE	
Total Credits		122-127

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 Exams (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 ≥2.0

Breadth Area Core Requirements (http://catalog.ewu.edu/undergraduate-degree/#generaleducationcorerequirementsgecrtext) (BACR)

Humanities and Arts (http://catalog.ewu.edu/undergraduate-degree/#humanitiesandfineartsgecrtext)
Natural Sciences (http://catalog.ewu.edu/undergraduate-degree/#naturalsciencesgecrtext)
Social Sciences (http://catalog.ewu.edu/undergraduate-degree/#socialsciencesgecrtext)

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

Diversity Course List (http://catalog.ewu.edu/undergraduate-degree/#cultureandgenderdiversityintheuslisttext)
Foreign Language (http://catalog.ewu.edu/undergraduate-degree/#foreignlanguageugrtext) (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)

All admitted students must officially Declare a Major (https://inside.ewu.edu/center-for-academic-advising-and-retention/academic-planning-tools/declare-your-major/) by the time they reach 90 credits (junior standing).
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).

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Use the Catalog Archives (https://catalog.ewu.edu/archives/) to
 determine two important catalog years (http://catalog.ewu.edu/
undergraduate-degree/#activecatalogruletext).
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SOAR (https://soar.ewu.edu/selfservice/general/home.html)
 calculates based on these two catalog years.
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1. 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).
2. The catalog *in effect at the time the student declares a major or minor* is used to determine the program requirements.

Students who successfully earn a BS in Chemistry/Biochemistry Major with Biochemistry from EWU should be able to do the following:

- demonstrate a broad-based knowledge of major concepts in the areas of inorganic, organic, analytical and physical chemistry;
- demonstrate sufficient preparation in chemistry to successfully compete in a graduate or professional program or to realize employment in a chemistry- or biochemistry-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.