BIOLOGY MAJOR WITH PRE-MEDICINE/PRE-DENTISTRY OPTION, BACHELOR OF SCIENCE (BS)

This curriculum is recommended for students planning a career in medicine or dentistry. See Pre-Professional Programs (http://catalog.ewu.edu/stem/biology/#pretext) for additional information. The schedule of classes is designed to prepare students for the aptitude examination (**MCAT** or **DAT**) which is taken during a student's junior or early senior year. Students interested in other health care professions (e.g., physical therapy, physician's assistant) need to see a department advisor to plan a curriculum.

Graduation Requirements: complete the Educational Testing Service (ETS) Major Field Test for Biology.

Grade Requirements: a cumulative GPA ≥2.0 for all courses in student's curriculum in Biology.

Required Biology Courses		
BIOL 171	BIOLOGY I	5
BIOL 172	BIOLOGY II	5
BIOL 173	BIOLOGY III	5
BIOL 270	BIOLOGICAL INVESTIGATION	3
BIOL 310	FUNDAMENTALS OF GENETICS	5
Choose one of the following		**5**
BIOL 301	MICROBIOLOGY	
BIOL 302	BOTANY	
BIOL 303	INVERTEBRATE ZOOLOGY	
BIOL 304	VERTEBRATE ZOOLOGY	
Choose one of the following		**5**
BIOL 436	CELL BIOLOGY	
BIOL 438	MOLECULAR BIOLOGY	
Choose one of the following		**4-5**
BIOL 334	HUMAN ANATOMY AND PHYSIOLOGY III	
BIOL 351	PRINCIPLES OF ANIMAL PHYSIOLOGY	
BIOL 352	PRINCIPLES OF PLANT PHYSIOLOGY	
BIOL 353	PRINCIPLES OF MICROBIAL PHYSIOLOGY	
Required supporting courses		
BIOL 371	PRE-MEDICAL, DENTAL, VETERINARY AND PHARMACY PREPARATION	1
BIOL 380	DATA ANALYSIS FOR BIOLOGISTS	5
or MATH 161	CALCULUS I	
or MATH 380	ELEMENTARY PROBABILITY AND STATISTICS	
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 351	ORGANIC CHEMISTRY	4
CHEM 352	ORGANIC CHEMISTRY	4
CHEM 353	ORGANIC CHEMISTRY	3
CHEM 371	PRE-MEDICAL, DENTAL, VETERINARY AND PHARMACY PREPARATION	1
CHEM 372	ORGANIC CHEMISTRY LABORATORY I	3
CHEM 480	BIOCHEMISTRY	5
PHYS 131	INTRODUCTORY PHYSICS I	4
PHYS 132	INTRODUCTORY PHYSICS II	4
PHYS 133	INTRODUCTORY PHYSICS III	4
PHYS 161	MECHANICS LABORATORY	1
PHYS 162	HEAT AND OPTICS LABORATORY	1
PHYS 163	ELECTRONICS LABORATORY I	1
Electives–choose three additional courses, two (9-10 credits) must be in Biology		**14-15**
BIOL 301	MICROBIOLOGY	
BIOL 304	VERTEBRATE ZOOLOGY	
BIOL 332	HUMAN ANATOMY AND PHYSIOLOGY I	
BIOL 333	HUMAN ANATOMY AND PHYSIOLOGY II	
BIOL 334	HUMAN ANATOMY AND PHYSIOLOGY III	
BIOL 343	BIOLOGY OF AGING	
BIOL 345	BIOLOGY OF SYMBIOSIS	
BIOL 351	PRINCIPLES OF ANIMAL PHYSIOLOGY	
BIOL 385	MOLECULAR BIOTECHNIQUES	
BIOL 411	FIELD BOTANY	
BIOL 421	MEDICAL BACTERIOLOGY	
BIOL 423	EVOLUTION	
BIOL 430	IMMUNOLOGY	
BIOL 432	VIROLOGY	
BIOL 435	BIOLOGY OF CANCER	
BIOL 436	CELL BIOLOGY	
BIOL 438	MOLECULAR BIOLOGY	
BIOL 440	ECOLOGY	
BIOL 460	HEMATOLOGY	
BIOL 473	NEUROBIOLOGY	
BIOL 476	MUSCLE PHYSIOLOGY	
BIOL 477	EMBRYOLOGY	
CHEM 481	INTERMEDIARY METABOLISM	
CHEM 483	BIOCHEMISTRY LABORATORY 1	
AAST 323	MEDICAL APARTHEID: EXPLORING MEDICAL EXPERIMENTATION, IMPLICIT BIAS, HEALTH DISPARITY	
ANTR 342	MEDICAL ANTHROPOLOGY	
CHST 400	CHICANO AND LATINO HEALTH	
CMST 340	INTERCULTURAL COMMUNICATION	
EXSC 460	PHYSIOLOGY OF EXERCISE	
FNDT 356	NUTRITION	
PSYC 302	ABNORMAL PSYCHOLOGY	
PSYC 305	CHILD AND ADOLESCENT DEVELOPMENT	
PSYC 306	ADULT DEVELOPMENT	
PSYC 309	SCIENTIFIC PRINCIPLES OF PSYCHOLOGY	
PSYC 315	PSYCHOLOGY OF HUMAN RELATIONS	
PSYC 316	HUMAN MEMORY AND COGNITION	
PSYC 317	HEALTH PSYCHOLOGY	
PSYC 331	PSYCHOLOGY OF WOMEN	

TCOM 205	INTRODUCTION TO TECHNICAL COMMUNICATION	
Required Senior Capstone		
BIOL 490	SENIOR CAPSTONE	5
Total Credits		**112-114**

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 could be offered in different terms, checking the academic schedule is paramount in keeping an individual plan current. **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/).

First Year

Fall Quarter	Credits	Winter Quarter	Credits	Spring Quarter	Credits
BIOL 171	5	BIOL 172	5	BIOL 173	5
CHEM 171 & 171L (Natural Science BACR 1)	5	BIOL 270	3	CHEM 173 & 173L	5
MATH 141	5	CHEM 172 & 172L (Natural Science BACR 2)	5	ENGL 201	5
		ENGL 101	5		
	15		**18**		**15**

Second Year

Fall Quarter	Credits	Winter Quarter	Credits	Spring Quarter	Credits
BIOL 310	5	BIOL 301	5	BIOL 436 or 438	5
CHEM 351	4	CHEM 352	4	CHEM 353	3
Diversity - graduation requirement[1]	5	CHEM 372	3	MATH 142	5
		Elective - certificate, minor, or general elective	5		
	14		**17**		**13**

Third Year

Fall Quarter	Credits	Winter Quarter	Credits	Spring Quarter	Credits
BIOL 371	1	CHEM 371	1	PHYS 133 & PHYS 163	5
BIOL 380 or MATH 161	5	CHEM 481	5	Humanities & Arts BACR 2[1]	5
CHEM 480	5	PHYS 132 & PHYS 162	5	Social Science BACR 1[1]	5
PHYS 131 & PHYS 161	5	Humanities & Arts BACR 1[1]	5		
	16		**16**		**15**

Fourth Year

Fall Quarter	Credits	Winter Quarter	Credits	Spring Quarter	Credits
Biology Elective[2]	5	Biology Elective[2]	5	BIOL 490 (Senior Capstone - graduation requirement)	5
Social Science BACR 2[1]	5	Elective - certificate, minor, or general elective	5	Biology Elective[2]	5
Elective - certificate, minor, or general elective	3	Elective - certificate, minor, or general elective	3	Global Studies - graduation requirement[1]	5
	13		**13**		**15**

Total Credits 180

1 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.

2 Electives—choose three additional courses from the approved list, two (9-10 credits) must be in Biology.

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 ≥2.0

Breadth Area Core Requirements (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)
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)

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.

Students who earn a BS in Biology with the Pre-Medicine/Pre-Dentistry Option from EWU should be able to:

- apply basic concepts of cell biology, including understanding key terms;
- apply basic concepts of molecular biology and genetics, including understanding key terms;
- apply basic concepts of organic chemistry and biochemistry, including understanding key terms;
- apply basic concepts of organismal biology and physiology, including understanding key terms;
- apply basic statistics to analyze and interpret quantitative data;
- compose written documents that communicate information in a manner consistent with scientific norms;
- deliver presentations that communicate information in a manner consistent with scientific norms;
- identify the steps required to submit an application to medical school or dental school;
- use scientific practices to generate evidence to support or refute proposed explanations for natural phenomena.