

BIOMEDICAL SCIENCES, BACHELOR OF SCIENCE (B.S.)

The Biomedical Sciences degree program is a rigorous program designed to prepare students for careers in biomedical research and a wide variety of biomedical professional programs. The Biomedical Sciences degree can be tailored to prepare students for graduate or professional schools, including but not limited to medical, dental, physician associates, optometry, and veterinary medicine. This degree will prepare students interested in pursuing a broad range of careers, including biotechnology, industrial microbiology, or pharmaceutical sales. The biomedical sciences degree provides students with a curriculum that develops strong creative and critical thinking skills while also providing them with the required and recommended courses for admission to graduate and professional schools.

Admission Requirements

All students must be admitted to the University by the ECU Admissions Office and declare their major as Biomedical Sciences (BMS). For admission to the BMS program, a high school graduate must meet the following three criteria:

1. A Math ACT score of 23 (or equivalent SAT) or a "C" or better in MAT 112A Algebra: Polynomials/MAT 112B Algebra: Functions & Matrices or MAT 114 College Algebra
2. An English ACT score of 20 (or equivalent SAT), or a "C" or better in ENG 101 Reading, Writing, and Rhetoric
3. A High School GPA of a 3.0.

Individuals who are transfer students or wish to change their major must have attained a minimum GPA of 3.00 overall on a minimum of 24 hours attempted. Entering freshmen and transfer students who do not meet the minimum requirements are encouraged to enroll in the Biology BS Degree program with a General Biology Concentration until qualified to transfer into the program.

Progression Policy

The Biomedical Sciences degree program limits the number of major core, concentration, and supporting courses which may be repeated. Students are allowed only one repeat per major course and a total of not more than two repeats in all major courses combined. In addition, a supporting course may be repeated only once.

To remain in the Biomedical Sciences degree program, a student must maintain an ECU GPA and overall GPA of 3.0 with a grade of "C"/2.0 or better in each of the supporting and major courses of the curriculum. Students who fail to maintain a 3.0 GPA will be removed from the BMS program and placed in the Biology B.S. program, General Biology Concentration.

Program Requirements

CIP Code: 26.0102

Major

Code	Title	Hours
University Graduation Requirements		
General Education (http://catalogs.ecu.edu/undergraduate/general-academic-information/general-education-requirements/)		36

Foundations of Learning

GSD 101	Foundations of Learning	3
Upper division courses (42 hrs. distributed throughout Major/Supporting/Gen Ed/Free Electives categories)		

Major Requirements

Core Courses

BIO 111 & 111L	Cell and Molecular Biology and Cell and Molecular Biology Lab	4
BIO 112 & 112L	Ecology and Evolution and Ecology and Evolution Lab	4
BIO 208 & 208L	Human Anatomy and Physiology I and Human Anatomy & Physio I Lab	4
BIO 308 & 308L	Human Anatomy and Physiology II and Human Anatomy and Physiology II Lab	4
BIO 315	Genetics	4
BIO 319	General Zoology	4
BIO 320	Principles of Microbiology	4
BIO 331	Cell Biology	3
BIO 332	Careers in Biomedical Sciences	1
BIO 348	Vertebrate Physiology	3
BIO 495	Evolutionary Application and Theory	1
CHE 112 & 112L	General Chemistry II and General Chemistry Lab	4
CHE 361 & 361L	Organic Chemistry I and Organic Chemistry Lab I	4
PHI 383	Health & Biomedical Ethics	3

Concentrations

Students must select at least one of the following Concentrations: ¹16-34

Biomedical Research
Pre-Medical
Pre-Dental
Pre-Physician Associate
Pre-Optometry
Pre-Veterinary

Supporting Course Requirements

All Concentrations:

CHE 111 & 111L	General Chemistry and General Chemistry Lab I (Element 4) ^G	3
INF 104	Computer Literacy with Software Applications	3
PHY 131 or PHY 201	College Physics I (Element 4) ^G or University Physics I	

Choose from one of the following:

STA 215	Introduction to Statistical Reasoning (Element 2) ^G
STA 270	Applied Statistics (Element 2) ^{G,2}

Free Electives

Choose from 8-19 hours of free electives	8-19
Total Hours	120

¹ Courses used for one concentration may not count toward another concentration.

² STA 270 Applied Statistics may be required for admission to Physician Associate or other professional programs.

G Course also satisfies a General Education element. Hours are included within the 36 hr. General Education requirement above.

Biomedical Research Concentration

Code	Title	Hours
Concentration Courses		
BIO 531	Principles of Molecular Biology	4
CHE 362 & 362L	Organic Chemistry II and Organic Chemistry Lab II	4
CHE 430 or CHE 431	Biochemistry of Macromolecules Metabolic Biochemistry	3
CHE 432	Biochemistry Laboratory	1
MAT 234	Calculus I (Element 2) ^G	4
Choose from 9-12 hours of the following:		9-12
BIO 342	Comparative Vertebrate Anatomy	
BIO 527	Immunology	
BIO 528	Virology	
BIO 533	Bioinformatics: Principles and Applications	
BIO 535	Pathogenic Microbiology	
BIO 546	Histology	
BIO 547	Comparative Vertebrate Embryology	
BIO 598	Special Problems	
CHE 430	Biochemistry of Macromolecules	
CHE 431	Metabolic Biochemistry	
Total Hours		25-28

Pre-Dental Concentration

Code	Title	Hours
Concentration Courses		
BIO 342 or BIO 546	Comparative Vertebrate Anatomy Histology	4
CHE 362 & 362L	Organic Chemistry II and Organic Chemistry Lab II	4
CHE 430 or CHE 431	Biochemistry of Macromolecules Metabolic Biochemistry	3
MAT 120	Trigonometry (or higher, Element 2) ^G	
Choose from nine hours of the following:		9
BIO 342	Comparative Vertebrate Anatomy	
BIO 527	Immunology	
BIO 528	Virology	
BIO 531	Principles of Molecular Biology	
BIO 535	Pathogenic Microbiology	
BIO 546	Histology	
BIO 547	Comparative Vertebrate Embryology	
BIO 598	Special Problems	
CHE 430	Biochemistry of Macromolecules	
CHE 431	Metabolic Biochemistry	
CHE 432	Biochemistry Laboratory	
Total Hours		20

Pre-Medical Concentration

Code	Title	Hours
Concentration Courses		
CHE 362 & 362L	Organic Chemistry II and Organic Chemistry Lab II	4
CHE 430	Biochemistry of Macromolecules	3
CHE 431	Metabolic Biochemistry	3
MAT 120	Trigonometry (or higher)	3
PHY 132 or PHY 202	College Physics II University Physics II	5
Choose from at least 6-10 hours of the following:		6-10
BIO 342	Comparative Vertebrate Anatomy	
BIO 527	Immunology	
BIO 528	Virology	
BIO 531	Principles of Molecular Biology	
BIO 535	Pathogenic Microbiology	
BIO 546	Histology	
BIO 547	Comparative Vertebrate Embryology	
BIO 598	Special Problems	
CHE 432	Biochemistry Laboratory	
<i>Additional Supporting Course Requirements</i>		
PSY 200	Introduction to Psychology	3
PSY 280	Lifespan Developmental Psychology	3
or PSY 308	Abnormal Psychology	
SOC 131 or HON 312	Introductory Sociology (Element 5B) ^G Honors Seminar in the Social and Behavioral Sciences:___	
Total Hours		30-34

Pre-Optometry Concentration

Code	Title	Hours
Concentration Courses		
CHE 362 & 362L	Organic Chemistry II and Organic Chemistry Lab II	4
CHE 430 or CHE 431	Biochemistry of Macromolecules Metabolic Biochemistry	3
MAT 234	Calculus I	4
PHY 132 or PHY 202	College Physics II University Physics II	5
Choose from 6-8 hours of the following:		6-8
BIO 527	Immunology	
BIO 528	Virology	
BIO 531	Principles of Molecular Biology	
BIO 535	Pathogenic Microbiology	
BIO 546	Histology	
BIO 547	Comparative Vertebrate Embryology	
BIO 598	Special Problems	
CHE 430	Biochemistry of Macromolecules	
CHE 431	Metabolic Biochemistry	
CHE 432	Biochemistry Laboratory	
<i>Additional Supporting Course Requirements</i>		
PSY 200	Introduction to Psychology (Element 5B) ^G	
Choose from six hours of the following:		6

ANT 120	Introduction to Cultural Anthropology
ECO 230	Fundamentals of Microeconomics
HON 312	Honors Seminar in the Social and Behavioral Sciences:____
PSY 308	Abnormal Psychology
SOC 131	Introductory Sociology

Total Hours **28-30**

Pre-Physician Associate Concentration

Code	Title	Hours
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Concentration Courses

EMC 105 or HSA 200	Survey of Medical Terminology Medical Terminology	1-3
MAT 120	Trigonometry (or higher)	3
Choose from at least six hours of the following:		6
BIO 527	Immunology	
BIO 528	Virology	
BIO 531	Principles of Molecular Biology	
BIO 535	Pathogenic Microbiology	
BIO 546	Histology	
BIO 547	Comparative Vertebrate Embryology	
BIO 598	Special Problems	
CHE 362	Organic Chemistry II	
CHE 430	Biochemistry of Macromolecules	
CHE 431	Metabolic Biochemistry	
CHE 432	Biochemistry Laboratory	

Additional Supporting Course Requirements

PSY 200	Introduction to Psychology (Element 5B) ^G	
ANT 120 or SOC 131	Introduction to Cultural Anthropology Introductory Sociology	3
PSY 280	Lifespan Developmental Psychology	3

Total Hours **16-18**

Pre-Veterinary Concentration

Code	Title	Hours
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Concentration Courses

AGR 321 or AGR 421	Feeds and Feeding Animal Nutrient Metabolism	3-4
CHE 362 & 362L	Organic Chemistry II and Organic Chemistry Lab II	4
CHE 430 or CHE 431	Biochemistry of Macromolecules Metabolic Biochemistry	3
MAT 120	Trigonometry (or higher)	3
Choose from 9-14 hours of the following:		9-14
BIO 342	Comparative Vertebrate Anatomy	
BIO 514	Evolution	
BIO 528	Virology	
BIO 531	Principles of Molecular Biology	
BIO 533	Bioinformatics: Principles and Applications	
BIO 535	Pathogenic Microbiology	
BIO 546	Histology	
BIO 547	Comparative Vertebrate Embryology	
BIO 550	Animal Behavior	

BIO 598	Special Problems
CHE 430	Biochemistry of Macromolecules
CHE 431	Metabolic Biochemistry
CHE 432	Biochemistry Laboratory

Total Hours **22-28**

G Course also satisfies a General Education element. Hours are included within the 36 hr. General Education requirement above.