Biology (BIO)

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- **BA: 56 hours**
- **BS, General Track: 68 credit hours**
- **BS, Pre-professional Track: 72-77 credit hours**
- **Minor: 19 hours**
- **Major/minor GPA required for graduation: 2.50**

PROGRAM REQUIREMENTS:
- **Capstone: Biology Research Methods (BIO 455)**
- **Research: Biology Research Methods (BIO 455)**

Other Requirements: **Complete Biology Core and Additional Requirements for specific degrees**

Description of Major: Biology is the scientific study of living organisms at all levels of organization. Through observation and the use of the scientific method, scientists test hypotheses and develop theories that explain natural phenomena.

Student Learning Outcomes
Students will:
• Practice biological inquiry using the scientific method.
• Demonstrate proficiency in scientific language and basic laboratory skills, including the use of modern technology.
• Communicate their findings to a broad audience, including individuals with scientific and non-scientific backgrounds.
• Develop an action plan tailored for their career goals.

Degree Preparation: The degree prepares students for immediate employment in a variety of areas, including conservation, wildlife biology, education, research (government, business, or academic settings), laboratory work in medicine, or work in biotechnology. Graduates are equally prepared to enter graduate or professional school in preparation for careers in research, teaching, or fields such as medicine (Medical Doctor, Physician's Assistant, Doctor of Osteopathic Medicine), physical therapy, nursing, pharmacy, dentistry, optometry, or veterinary science.

Students wishing to teach biology in a public school setting must fulfill all of the requirements in the Science Education: Biology Emphasis section of the catalog under "School of Education."

A maximum of 20 credit hours from lower division courses in biology may be applied toward the credit hour total in the major.

BIOLOGY CORE REQUIREMENTS **51 crs.**

All students majoring in biology must complete the following:

BIO 108	BIOLOGY CORNERSTONE	(1)
BIO 110	PRINCIPLES OF CELLULAR AND MOLECULAR BIOLOGY	(4)
BIO 111	PRINCIPLES OF ORGANISMAL AND POPULATION BIOLOGY	(4)
BIO 211	GENETICS	(4)
BIO 220	EVOLUTION (W)	(3)
BIO 300	BIOMEASUREMENT	(3)
BIO 303	ECOLOGY (W)	(5)
BIO 313	CELLULAR BIOLOGY	(4)
BIO 455	BIOLOGY RESEARCH METHODS	(2)
CHE 105	COLLEGE CHEMISTRY I	(5)
CHE 106	COLLEGE CHEMISTRY II	(5)
	BIOLOGY ELECTIVES	(11)

Students must take elective courses from biology or biochemistry that satisfy each of the following three areas: cell/molecular, organismal, ecology/evolution. Courses that satisfy these areas are indicated below in the course descriptions under biology and biochemistry. Students are free to take additional elective courses as long as the minimum requirements for elective courses are met.

BACHELOR OF ARTS **56 crs.**

Complete the core requirements, plus the following:

CHE 150	PRINCIPLES OF ORGANIC CHEMISTRY	(4)
CHE 151	PRINCIPLES OF ORGANIC CHEMISTRY LAB	(1)

BACHELOR OF SCIENCE: GENERAL TRACK **68 crs.**

Complete the core requirements, plus the following:

BCH 303	PRINCIPLES OF BIOCHEMISTRY	(4)
MTH 210	CALCULUS I	(4)
PHY 211	PHYSICS I	(4)
CHE 150	PRINCIPLES OF ORGANIC CHEMISTRY	(4)
CHE 151	PRINCIPLES OF ORGANIC CHEMISTRY LAB	(1)

BACHELOR OF SCIENCE: PRE-PROFESSIONAL TRACK **72-77 crs.**

Complete the core requirements, plus the following:

BCH 303	PRINCIPLES OF BIOCHEMISTRY	(4)
MTH 210	CALCULUS I	(4)
PHY 211	GENERAL PHYSICS I	(4)
PHY 212	GENERAL PHYSICS II	(4)

COMPLETE ONE OF THE TWO FOLLOWING OPTIONS

Option 1:

CHE 150	PRINCIPLES OF ORGANIC CHEMISTRY	(4)
CHE 151	PRINCIPLES OF ORGANIC CHEMISTRY LAB	(1)

Option 2:

CHE 205	ORGANIC CHEMISTRY I	(5)
CHE 206	ORGANIC CHEMISTRY II	(5)

RECOMMENDED ELECTIVES

BCH 310	INTRODUCTION TO MOLECULAR MODELING AND BIOINFORMATICS	(2)
BIO 308	HUMAN ANATOMY AND PHYSIOLOGY I	(5)
BIO 309	HUMAN ANATOMY AND PHYSIOLOGY II	(5)
BIO 311	MICROBIOLOGY	(5)
BIO 340	DEVELOPMENTAL BIOLOGY	(3)
BIO 410	ANIMAL PHYSIOLOGY	(4)
BIO 420	COMPARATIVE VERTEBRATE ANATOMY	(5)
MTH 211	CALCULUS II	(4)

To complete a minor in biology, students must complete the requirements listed below. The same requirements regarding minimum cumulative grade point average apply to the major apply to the minor.

BIOLOGY MINOR REQUIREMENTS **19 crs.**

BIO 110	PRINCIPLES OF CELLULAR AND MOLECULAR BIOLOGY	(4)
BIO 111	PRINCIPLES OF ORGANISMAL AND POPULATION BIOLOGY	(4)
BIO 211	GENETICS	(4)
BIO 220	EVOLUTION (W)	(3)
	BIO ELECTIVES (300 or 400 LEVEL)	(4)