

## BIOLOGICAL SCIENCE MAJOR: BIOLOGICAL SCIENCE CONCENTRATION

### GRADUATION REQUIREMENTS

1. Complete all Biology Core, Major Electives, Physical Sciences/Math, and AUCC Requirements.
2. Minimum of **120 total credits**.
3. Minimum of **42 upper division credits** (300 level or above). \*30 upper division credits must be in-residence at CSU
4. Minimum of **2.0 CUMULATIVE GPA**.

### ALL UNIVERSITY CORE CURRICULUM (AUCC)

Must earn at least a **2.0 cumulative GPA** in the AUCC courses.

#### Categories 1 & 2: Fundamental Competencies

- 1A. Fundamental Competency – CO 150 (3 credits) \_\_\_\_\_
- 1B. Fundamental Competency (3 credits) fulfilled by major \_\_\_\_\_
- 1C. Fundamental Competency (3 credits) \_\_\_\_\_
2. Advanced Writing (3 credits) \_\_\_\_\_

#### Category 3: Foundations and Perspectives

- 3A. Bio/Phys Sciences (7 credits) fulfilled by major \_\_\_\_\_
- 3B. Arts/Humanities (6 credits) \_\_\_\_\_
- 3C. Social/Behavioral (3 credits) \_\_\_\_\_
- 3D. Historical Perspectives (3 credits) \_\_\_\_\_

#### Category 4: Depth and Integration

LIFE 320 and BZ 350 (*see CORE Requirements below*)

### GRADE REQUIREMENTS

Must earn at least a **C-** in all **Biology Core & Major Elective** courses. This also applies to courses taken as substitutions for these requirements.

### BIOLOGY CORE REQUIREMENTS

LIFE 102 Attributes of Living Systems (4) \_\_\_\_\_

LIFE 103 Biology of Organisms (4) \_\_\_\_\_

BZ 220 Introduction to Evolution (3) \_\_\_\_\_

BZ 310 Cell Biology (4) \_\_\_\_\_

BZ 311 Developmental Biology (4) \_\_\_\_\_

BZ 350 Molecular & General Genetics (4) \_\_\_\_\_

LIFE 320 Ecology (3) \_\_\_\_\_

### PHYSICAL SCIENCES/MATH

#### CHEMISTRY

CHEM 111 (4) \_\_\_\_\_ CHEM 112 (1) \_\_\_\_\_  
**AND**

CHEM 113 (3) \_\_\_\_\_ CHEM 114 (1) \_\_\_\_\_

#### ORGANIC CHEMISTRY

CHEM 245 (4) \_\_\_\_\_ CHEM 246 (1) \_\_\_\_\_

**OR**

CHEM 341\* (3) \_\_\_\_\_ CHEM 343 (3) \_\_\_\_\_

CHEM 344 (2) \_\_\_\_\_

#### BIOCHEMISTRY

BC 351 (4) \_\_\_\_\_

**OR**

BC 401 (3) \_\_\_\_\_ BC 403 (3) \_\_\_\_\_

#### PHYSICS

PH 121 (5) \_\_\_\_\_ PH 122 (5) \_\_\_\_\_

**OR**

PH 141 (5) \_\_\_\_\_ PH 142 (5) \_\_\_\_\_

#### CALCULUS

MATH 155 (4) \_\_\_\_\_ **OR** MATH 160 (4) \_\_\_\_\_

#### STATISTICS

STAT 301 (3) \_\_\_\_\_ **OR** STAT 307 (3) \_\_\_\_\_

\* Chemistry requires C or better in CHEM 341 to move on to CHEM 343.

### MAJOR ELECTIVES

Must complete a minimum of **18 credits** from the major electives lists.

\*At least **9 credits** must be “BZ” courses.

\*With approval of the Curriculum Committee, up to 3 credits of the following can be applied toward a student’s major electives:

\*BZ 384 Supervised College Teaching

\*BZ 487 Internship

\*BZ 495 Independent Study

\*BZ 498 Laboratory or Field Research

**TRACK 1 HONORS PROGRAM STUDENTS ARE REQUIRED TO TAKE THE FOLLOWING COURSES TO  
FULFILL THE AUCC CURRICULUM**

**Category 1: Fundamental Competencies**

HONR 192 First Year Seminar (3) \_\_\_\_\_

HONR 193 Seminar (3) \_\_\_\_\_

**Category 2: Fundamental Competency**

Advanced Writing (3) \_\_\_\_\_

**Category 3B: Arts/Humanities**

HONR 292B Seminar (3) \_\_\_\_\_

HONR 392 Seminar (3) \_\_\_\_\_

**Category 3C: Social/Behavioral**

HONR 492 Senior Seminar (3) \_\_\_\_\_

**Category 3D: Historical Perspectives and 1C: Fundamental Competency**

HONR 399 Pre-Thesis (1) \_\_\_\_\_

HONR 499 Thesis (3) \_\_\_\_\_

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## **MAJOR ELECTIVES**

Students must complete a **minimum of 18 credits** across this list. **At least 9 credits must be from “BZ” courses.**

\*With the approval of the Biology Curriculum Committee, a maximum of 3 credits from BZ 384, BZ 487, BZ 495, and BZ 498 may be applied towards a student's major electives.

BZ 212 (4)	Animal Biology – Invertebrates	BZ 475 (3)	Marine Mammalogy
BZ 214 (4)	Animal Biology – Vertebrates	BZ 477 (2)	Genome Editing
BZ 223 (3)	Plant Identification	BZ 478 (3)	Biology & Behavior of Cats (online)
BZ 240 (3)	Synthetic Biology – Principles and Applications	BZ 479 (3)	Biology & Behavior of Dogs (online)
BZ 300 (3)	Animal Behavior	BZ 492A-G (1)	Seminar (topic dependent on instructor)
BZ 320 (3)	Biogeographic Approaches to Conservation	BZ 496 (1)	Group Study – Biology (Honors)
BZ 325 (4)	Plant Systematics	BZ 515 (3)	Physiological Ecology of Marine Vertebrates
BZ 329 (4)	Herpetology	BZ 520 (3)	Advanced Systematics
BZ 330 (4)	Mammalogy	BZ 526 (3)	Evolutionary Ecology
BZ 331 (4)	Developmental Plant Anatomy	BZ 530 (2)	Ecological Plant Morphology
BZ 333 (4)	Introductory Mycology	BZ 535 (3)	Behavioral & Cognitive Ecology
BZ 335 (3)	Ornithology	BZ 540 (2)	Translocation in Plants
BZ 339 (3)	Field Practicum	BZ 541 (3)	Hemp Biology (online)
BZ 340 (4)	Field Mammalogy	BZ 544 (2)	Effective Scientific Presentations
BZ 342 (3)	Exploring Range Shifts in a Changing World	BZ 560 (3)	Teaching & Communication Science
BZ 348 (4)	Theory of Pop. & Evolutionary Ecology	BZ 562 (2)	Computational Approaches in Molecular Ecology
BZ 349 (3)	Tropical Ecology & Evolution	BZ 565 (1)	Next Generation Sequencing
BZ 360 (3)	Bioinformatics & Genomics	BZ 568 (3)	Platform/Libraries
BZ 390 (3)	Biology of Sex	BZ 570 (3)	Sustaining River Ecosystems in a Changing World
BZ 401 (3)	Comparative Animal Physiology	BZ 572 (3)	Molecular Aspects of Plant Development
BZ 414 (3)	Vertebrate Climate Change Responses		Phytoremediation (online)
BZ 415 (4)	Marine Biology		
BZ 418 (4)	Ecology of Infectious Diseases	AB 303 (2)	Entomology Lab
BZ 420 (3)	Evolutionary Medicine	AB 340 (3)	Insect Biotechnology
BZ 424 (3)	Principles of Systematic Zoology	ANEQ 310 (3)	Animal Reproduction
BZ 425 (3)	Conservation & Population Genomics	ANEQ 320 (3)	Principles of Animal Nutrition
BZ 430 (3)	Animal Behavior & Conservation	ANEQ 322 (2)	Pet Nutrition
BZ 433 (3)	Behavioral Genetics	ANEQ 323 (2)	Zoo Nutrition
BZ 435A (2)	Study Abroad-Honduras: Dolphin Behavior & Physiology	ANEQ 330 (3)	Principles of Animal Breeding
BZ 435B (3)	Study Abroad-Mexico: Practices in Marine Biology & Ecology	ANTH 370 (3)	Primates
BZ 435C (3)	Study Abroad-Kenya: Biology & Behavior of African Mammals	ANTH 373 (3)	Human Evolution
BZ 435D (3)	Study Abroad-Madagascar: Biology & Behavior of Primates	ANTH 374 (3)	Human Biological Variation
BZ 440 (3)	Plant Physiology	ANTH 470 (4)	Paleontology Field School
BZ 441 (2)	Plant Physiology Lab	BC 353 (4)	Pre-Health Genetics
BZ 449A (4)	Study Abroad-Ecuador: Ecology & Conservation-Ecuadorian Biodiversity	BC 401 (3)	Comprehensive Biochemistry I
BZ 450 (4)	Plant Ecology	BC 403 (3)	Comprehensive Biochemistry II
BZ 455 (3)	Human Heredity & Birth Defects	BC 404 (2)	Comprehensive Biochemistry Lab
BZ 460 (4)	Genome Evolution	BC 463 (3)	Molecular Genetics
BZ 462 (5)	Parasitology & Vector Biology	BMS 300 (4)	Human Physiology
BZ 471 (3)	Stream Biology & Ecology	BMS 301 (5)	Human Gross Anatomy
BZ 472 (1)	Stream Biology & Ecology Lab	BMS 302 (2)	Laboratory in Principles of Physiology

BMS 305 (4)	Domestic Animal Gross Anatomy	PHIL 325 (3)	Philosophy of Natural Science
BMS 310 (4)	Anatomy for the Health Prof. (online)	PHIL 326 (3)	Philosophy of Biology
BMS 320 (2)	Virtual Laboratory in Physiology		
BMS 325 (3)	Cellular Neurobiology		
BMS 330 (4)	Microscopic Anatomy	PSY 352 (3)	Learning & Memory
BMS 345 (4)	Functional Neuroanatomy	PSY 454 (3)	Biological Psychology
BMS 400 (1)	Case Studies - Neuroanatomy		
BMS 405 (3)	Nerve & Muscle - Toxins, Trauma, & Disease	RS 331 (3)	Wildland Plants & Plant Communities
BMS 409 (3)	Human & Animal Reproductive Bio	RS 351 (3)	Wildland Ecosystems in a Changing World
BMS 420 (3)	Cardiopulmonary Physiology	RS 478 (3)	Ecological Restoration
BMS 425 (3)	Introduction to Systems Neurobiology		
BMS 430 (3)	Endocrinology	SOCR 455 (3)	Soil Microbiology
BMS 450 (3)	Pharmacology	SOCR 456 (1)	Soil Microbiology Lab
BMS 460 (3)	Essentials of Pathophysiology		
BSPM 302 (2)	Applied & General Entomology	VS 331 (4)	Histology (online)
BSPM 361 (3)	Elements of Plant Pathology	VS 333 (4)	Domestic Animal Anatomy (online)
BSPM 423 (3)	Evolution & Classification of Insects		
ERHS 332 (3)	Principles of Epidemiology		
ERHS 340 (2)	Cancer Biology, Medicine, and Society		
ERHS 450 (3)	Introduction to Radiation Biology		
F 311 (3)	Forest Ecology		
FSHN 350 (3)	Human Nutrition		
FW 300 (2)	Biology & Diversity of Fishes		
FW 301 (1)	Ichthyology Lab		
FW 400 (3)	Cons. of Fish in Aquatic Ecosystems		
FW 405 (3)	Fish Physiology		
GEOL 342 (3)	Paleontology		
HES 403 (4)	Physiology of Exercise		
HORT 460 (3)	Plant Breeding		
MIP 300 (3)	General Microbiology		
MIP 302 (2)	General Microbiology Lab		
MIP 303 (1)	General Microbiology – Honors Recitation		
MIP 315 (3)	Human & Animal Disease		
MIP 334 (3)	Food Microbiology		
MIP 335 (2)	Food Microbiology Lab		
MIP 342 (4)	Immunology		
MIP 343 (2)	Immunology Lab		
MIP 351 (3)	Medical Bacteriology		
MIP 352 (3)	Medical Bacteriology Lab		
MIP 420 (4)	Medical & Molecular Virology		
MIP 425 (2)	Virology & Cell Culture Lab		
MIP 432 (3)	Microbial Ecology		
MIP 433 (1)	Microbial Ecology Lab		
MIP 443 (4)	Microbial Physiology		
MIP 450 (3)	Microbial Genetics		
NR 370 (3)	Coastal Environmental Ecology		