

**Degree Type – Bachelor of Science (BS)****Degree Title – Biology****Focus: Biological Science**

*The Department of Biology is committed to excellence in instruction, scholarly accomplishment, research, professional service, and student success. The Department provides a broad-based undergraduate education in Biology so as to give students the opportunity to pursue a career best-suited to their interests and abilities. Graduates are prepared to enter the workforce or continue their education in graduate or professional school. The Department provides rigorous pre-professional preparation for students seeking careers in biological sciences and health professions.*

**STUDENT LEARNING OUTCOMES:**

- 1. Role of the Cell:** The Biology graduate knows the role of the cell in life and living systems, and understands the interrelationships among subcellular structures that contribute to its functioning as a unit
- 2. Role of Genetics:** The Biology graduate understands the role of genetics in inheritance and can explain how environmental conditions influence natural selection processes and contribute to adaptation.
- 3. Diversity of Life:** The Biology graduate is aware of the diversity of life and interrelationships between an organism and its environment.
- 4. Structure and Function:** The biology graduate understands how the organization of a specific structure within an organism is related to a specific function, understands interrelationships among organs and organ systems within an organism, and how interaction between structure and function contribute to the survival of the organism.
- 5. Scientific Method:** The biology graduate understands the Scientific Method, is able to analyze and interpret data, and communicate research findings in both oral and written form.

**A – GENERAL EDUCATION CORE – 42 HOURS**

*Students must fulfill the General Education Core requirements. The courses listed below satisfy both degree requirements and General Education Core requirements.*

**Required****Mathematics – 3 hours**

*Choose one:*

MATH 1342 Elementary Statistical Methods (or MATH 1387 Honors)

MATH 1343 Introduction to Biostatistics (or MATH 1388 Honors)

**Life and Physical Sciences – 6 hours**

CHEM 1311 General Chemistry I

CHEM 1312 General Chemistry II

**Language, Philosophy and Culture – 3 hours**

*Choose from:*

PHIL 1301 Introduction to Philosophy (or PHIL 1387 Honors)

PHIL 1366 Philosophy and History of Science and Technology

**Integrative and Experiential Learning – 2 hours**

CHEM 1111 General Chemistry I Lab

CHEM 1112 General Chemistry II Lab

**B – MAJOR REQUIREMENTS – 58 HOURS (24 advanced minimum)****1 – Biology Core – 42 hours (18 advanced)**

BIOL 1406 General Biology I (or BIOL 1487 Honors)

BIOL 1407 General Biology II (or BIOL 1488 Honors)

BIOL 3301 Biological Evolution  
BIOL 3409 Ecology  
BIOL 3413 Genetics  
BIOL 4400 Biological Communication (Capstone)  
CHEM 2323 Organic Chemistry I  
CHEM 2123 Organic Chemistry I Lab  
CHEM 2325 Organic Chemistry II  
CHEM 2125 Organic Chemistry II Lab  
CHEM 3303 Biochemistry  
PHYS 1401 General Physics I  
PHYS 1402 General Physics II

## **2 – Biology Electives – 16 hours (6 advanced minimum)**

### **a – Cell/Molecular Course**

*Choose at least one:*

BIOL 3401 General Microbiology  
BIOL 3403 Medical Microbiology and Immunology  
BIOL 3412 Cell Biology  
BIOL 3415 Molecular Biology  
BIOL 4313 Endocrinology  
BIOL 4330 Molecular Evolution  
BIOL 4361 Neuroscience I: Cellular and Molecular  
BIOL 4413 General Virology  
BIOL 4417 Bacterial Genetics  
BIOL 4418 Electron Microscopy  
BIOL 4421 Biotechnology

### **b – Developmental/Morphology**

*Choose at least one:*

BIOL 2428 Comparative Vertebrate Anatomy  
BIOL 3405 Histology  
BIOL 3406 Developmental Mechanisms  
BIOL 3407 Comparative Embryology  
BIOL 3408 Plant Morphology  
BIOL 4420 Plant Anatomy

### **c – Organismal/Environmental**

*Choose at least one:*

BIOL 3404 Conservation Biology  
BIOL 3409 Ecology  
BIOL 3414 Invertebrate Zoology  
BIOL 4316 Environmental Toxicology  
BIOL 4318 Ethnobotany  
BIOL 4319 Medical Entomology  
BIOL 4388 Global Change Ecology  
BIOL 4402 Marine Zoology  
BIOL 4403 Introduction to Remote Sensing Technology  
BIOL 4404 Ichthyology  
BIOL 4406 Mycology  
BIOL 4407 Animal Parasitology  
BIOL 4408 Plant Pathology  
BIOL 4409 Herpetology  
BIOL 4410 Marine Botany

BIOL 4412 Ornithology  
BIOL 4414 Plant Taxonomy  
BIOL 4415 Entomology  
BIOL 4416 Mammalogy  
BIOL 4419 Aquatic Entomology  
BIOL 4424 Microbial Ecology  
BIOL 4426 Marine Ecology  
BIOL 4427 Marine Animal Field Studies  
BIOL 4432 Animal Behavior

**d – Physiology**

*Choose at least one:*

BIOL 1322 Human Nutrition  
BIOL 2401 Anatomy and Physiology I  
BIOL 2402 Anatomy and Physiology II  
BIOL 3310 Neurobiology  
BIOL 3345 Animal Nutrition  
BIOL 3411 Mammalian Physiology  
BIOL 4317 Disease Epidemiology  
BIOL 4362 Neuroscience II: System, Developmental, and Disorders  
BIOL 4405 Plant Physiology  
BIOL 4411 Ecological Physiology of Animals  
BIOL 4422 Neurobiology Methods

**C – SUPPORT COURSES – 6 HOURS**

PSYC 2301 General Psychology  
SOCL 1301 Introduction to Sociology

**D – FREE ELECTIVES – 14 HOURS (8 advanced minimum)**

*Pre-medical/Pre-dental/Pre-optometry/Pre-veterinary students are strongly encouraged to take CHEM 2325/CHEM 2125 Organic Chemistry II, CHEM 3303 Biochemistry, and PHYS 1402 General Physics II.*

**TOTAL CREDIT HOURS FOR GRADUATION – 120 HOURS****TOTAL ADVANCED HOURS – 42 HOURS****ADMISSION, PROGRESSION, AND GRADUATION REQUIREMENTS, if applicable:****Admission requirements**

Admission requirements to this program: BIOL 1406 (or BIOL 1487 Honors), BIOL 1407 (or BIOL 1488 Honors), and CHEM 1311/CHEM 1111 with a 'C' or better grade in all of these courses and Department approval.

**Graduation requirements**

In addition to the graduation requirements listed in the UTRGV 2015-2017 Undergraduate Catalog, demonstration of proficiency in a language other than English is required at the undergraduate level equivalent to a minimum of six credit hours. Proficiency can be demonstrated by a college credit exam, a placement test approved through the UTRGV Department of Writing and Language Studies, and/or up to six credit hours of college-level language coursework.