

# Biology

Technological breakthroughs in areas such as biochemistry, botany, ecology, genetics, microbiology, molecular biology, and physiology are being used to solve problems in agriculture, the environment, and medical oriented industries. Preparing students at all levels in the education system to work in the sciences is important to solving future problems and making new discoveries. The Department of Biology focuses on areas of modern biology and biotechnology offering a degree in two specializations: B.S. General Biology and B.A. Biology Teaching. The specializations include a series of seven core courses fundamental to all areas of biology.

Graduates with the B.S. General Biology degree are prepared to gain employment in industry, government, health professions, and research laboratories, or to pursue advanced degrees in the biological sciences. Graduates with the B.A. Biology Teaching degree are certified to teach in the public high school system in Florida. Prospective students need to be aware that some biology lab courses involve the use of live animals. Students may wish to seek details from course instructors before enrolling.

## Program Requirements

In addition to the university's general requirements, students seeking the B.S. or B.A. in Biology must meet the requirements listed below.

A grade of "C" or better is required in each of the seven biology core courses. Consult with your academic advisor for courses that may satisfy both the General Education requirements and common prerequisites.

## General Education

Biology majors should satisfy the mathematics (6 sh) and science (7 sh) components of General Education with course work taken from the common prerequisites shown below.

In addition to the General Education requirements listed on this page, students must satisfy all additional University requirements, including the Gordon Rule, multicultural, and foreign language requirements. With appropriate planning and coordination with an academic advisor, students may satisfy some of the general University requirements through the General Education curriculum. For a complete listing of general degree requirements, refer to the "Graduation and General Degree Requirements (<http://catalog.uwf.edu/undergraduate/universityrequirements>)" section of this catalog.

General Education Curriculum:

## Communication

ENC 1101	English Composition I	3
ENC 1102	English Composition II	3

## Mathematics

Choose one course from Group A and one Additional course from either Group A or Group B 6

Group A		
MAC 1105	College Algebra	
MAC 2311	Analytic Geometry and Calculus I	
MGF 1106	Mathematics for Liberal Arts I	
MGF 1107	Mathematics for Liberal Arts II	
STA 2023	Elements of Statistics	

Group B		
MAC 1105C	College Algebra with Lab	
MAC 1114	Trigonometry	
MAC 1140	Precalculus Algebra	
MAC 2233	Calculus with Business Applications	
MAC 2312	Analytic Geometry and Calculus II	

## Social Sciences

Choose one course from Group A and one additional course from either Group A or Group B 6

Group A		
AMH 2020	United States since 1877	
ANT 2000	Introduction to Anthropology	
ECO 2013	Principles of Economics Macro	
POS 2041	American Politics	
PSY 2012	General Psychology	
SPM 2010	Sport in Global Society	
SYG 2000	Introduction to Sociology	

Group B		
AMH 2010	United States to 1877	
ANT 2400	Current Cultural Issues	
ANT 2100	Introduction to Archaeology	
CCJ 2002	Survey of Crime and Justice	
CPO 2002	Comparative Politics	
DEP 2004	Human Development Across the Lifespan	
EUH 1000	Western Perspectives I	
EUH 1001	Western Perspectives II	
FIN 2104	Personal Financial Planning	
GEA 2000	Nations and Regions of the World	
GEB 1011	Introduction to Business	
IDH 1041	Honors Core 2	
INR 2002	International Politics	
MMC 2000	Principles of Mass Communication	
PLA 2013	Survey of American Law	
SOW 2192	Understanding Relationships in the 21st Century	
SYG 2010	Current Social Problems	

## Humanities

Choose one course from Group A and one additional course from either Group A or Group B 6

Group A		
ARH 1000	Art Appreciation	
LIT 2000	Introduction to Literature	
MUL 2010	Music Appreciation	
PHI 2010	Introduction to Philosophy	
THE 2000	Theatre Appreciation	

Group B		
AML 2010	American Literature I	
AML 2020	American Literature II	
AML 2072	Sex, Money, and Power in American Literature	
ARH 2050	Western Survey I: Prehistory to the Medieval Period	

ARH 2051	Western Survey II: Renaissance to Contemporary
ART 1015C	Exploring Artistic Vision
ART 2821	Art and Visual Culture Today
CRW 2001	Introduction to Creative Writing
ENL 2010	History of English Literature I
ENL 2020	History of English Literature II
IDH 1040	Honors Core 1
MUH 2930	The Music Experience: Special Topics
PHI 2103	Critical Thinking
PHI 2603	Ethics in Contemporary Society
REL 1300	World Religions
THE 2300	Survey of Dramatic Literature
SPC 2608	Basic Communication Skills

## Natural Sciences

Choose one course from Group A and one additional course from either Group A or Group B 6

Group A	
AST 1002	Descriptive Astronomy
BSC 1005	General Biology for Non-Majors
BSC 1085	Anatomy and Physiology I
BSC 2010	Biology I
CHM 1020	Concepts in Chemistry *
CHM 2045	General Chemistry I *
ESC 2000	Introduction to Earth Science
EVR 2001	Introduction to Environmental Science
PHY 1020	Introduction to Concepts in Physics *
PHY 2048	University Physics I **
PHY 2048C	University Physics I - Studio
PHY 2053	General Physics I **
Group B	
ANT 2511	Biological Anthropology
BOT 2010	General Botany
BSC 1050	Fundamentals of Ecology
BSC 1086	Anatomy and Physiology II *
BSC 2011	Biology II
BSC 2311	Introduction to Oceanography and Marine Biology *
CGS 2060	Excursions in Computing
CHM 1032	Fundamentals of General Chemistry *
CHM 2046	General Chemistry II *
CIS 2530	Introduction to Cyber Security
GEO 1200	Physical Geography
GLY 2010	Physical Geology *
MCB 1000	Fundamentals of Microbiology *
PHY 2049	University Physics II **
PHY 2054	General Physics II *

\* May be taken with or without lab.

\*\* General Physics is non-calculus based and is usually recommended for non-science majors. University Physics is calculus based and is usually recommended for science majors.

\*\*\* Although students receive 5 semester hours credit for PHY 2048C, an additional 3 semester science course will be needed to meet General Education requirements.

## General Education Electives

Choose an additional course from two of the three areas of Humanities, Social Sciences and Natural Sciences

## Common Prerequisites

State mandated common prerequisites must be completed prior to graduation, but are not required for admission to the program. See the Common Prerequisite Manual (<https://dlss.flvc.org/admin-tools/common-prerequisites-manuals>) for course substitutions from Florida colleges and universities.

Graduation requirements for the B.S. or B.A. degree in Biology include the successful completion of the common prerequisites. Because it will be difficult to incorporate all prerequisites into the 60 sh Lower Division Curriculum, students are advised to complete the following common prerequisites.

BSC 2010+L	Biology I (+Lab)	4
BSC 2011+L	Biology II (+Lab)	4
CHM 2045+L	General Chemistry I (+Lab) *	4
CHM 2046+L	General Chemistry II (+Lab) *	4
MAC 2311	Analytic Geometry and Calculus I *	4
STA 2023	Elements of Statistics *	3
Choose one option from the following:		8
Option 1		
CHM 2210+L	Organic Chemistry I (+Lab)	
CHM 2211+L	Organic Chemistry II (+Lab)	
Option 2 (Preferred Option)		
PHY 2053+L	General Physics I (+Lab) *	
PHY 2054+L	General Physics II (+Lab) *	
Total Hours		31

\* Indicates common prerequisites which can be used to satisfy General Education requirements.

## Lower Division Electives

Students must complete sufficient 1000/2000 level electives to satisfy at least 60 sh in the lower division. Current UWF students may use elective courses at any level (1000-4000) to meet this elective requirement.

Total Hours		0-6
Total Hours		
Total Hours		0-6
<b>Biology Core</b>		
BCH 3033+L	Biochemistry I (+Lab)	4
BSC 2844	Biology Skills	1
MCB 3020+L	Microbiology (+Lab)	4
PCB 3063C	Genetics	4
PCB 4043+L	Ecology (+Lab)	4
PCB 4673	Principles of Evolution	3
PCB 4922	Biology Seminar	1
Total Hours		21

## General Biology Specialization

The General Biology Specialization includes a grounding in the basic areas of biology from molecular to ecological processes. Electives allow students to concentrate in areas of interest, such as microbiology, ecology, etc., at a more advanced level. Directed study hours may be included as elective to increase "hands-on" learning in an area of interest.

Minimum grade of "C" or better required in all courses in the program to include all Core, Specialization, Subcore, Major-Related and Common Prerequisites.

### Major-Related

STA 4173	Biostatistics	3
Students must take one of the following that are not completed as part of the Common Prerequisites in the lower division:		4
CHM 2210+L	Organic Chemistry I (+Lab)	
PHY 2053+L	General Physics I (+Lab)	
Total Hours		7

### Biology Core - 21 sh

See Program Requirements

### General Biology Specialization

PCB 3103+L	Cell Biology (+Lab)	4
Choose one of the following:		4
BOT 4503+L	Plant Physiology (+Lab)	
PCB 4098+L	Concepts in Human Physiology (+Lab)	
PCB 4723+L	Comparative Animal Physiology (+Lab)	
Choose one of the following:		4
BOT 4374+L	Plant Developmental Biology (+Lab)	
PCB 3253+L	Developmental Biology (+Lab)	
Choose one of the following:		4
BOT 4734+L	Plant Biotechnology (+Lab)	
PCB 4524+L	Molecular Biology (+Lab)	
Total Hours		16

### General Biology Sub-core

3000/4000 level Biology electives with the following course prefixes (BCH, BOT, BSC, GEY, MCB, PCB, ZOO) with the exception of PCB 4703 and ZOO 3558

or any of the following:

HSC 3535	Medical Terminology	
HSC 3555	Pathophysiology	
MLS 4305+L	Hematology I (+Lab)	
MLS 4462+L	Medical Microbiology (+Lab)	
MLS 4625+L	Clinical Chemistry I (+Lab)	
MLS 4630+L	Clinical Chemistry II (+Lab)	
OCE 3007	Concepts of Oceanography and Marine Biology	
Total Hours		16

The upper-division courses (3000-4000 level) with the following prefixes will be used in calculating the major grade point average: BCH, BOT, BSC, PCB, MCB, ZOO, and HSC.

Up to 2 sh of directed study credit may be applied to electives. Students must confer with advisor when selecting electives.

The sub-core may include any upper division course in biology, except ZOO 3733. At least two upper division botany courses must be included in the program.

## Biology Teaching

Minimum grade of "C" or better required in all courses in the program to include all Core, Elective, Education, Major-Related, and Common Prerequisites.

### Lower Division Common Prerequisite Science and Math Courses

BSC 2010	Biology I	3
BSC 2010L	Biology I Laboratory	1
BSC 2011	Biology II	3
BSC 2011L	Biology II Laboratory	1
CHM 2045	General Chemistry I	3
CHM 2045L	General Chemistry I Laboratory	1
CHM 2046	General Chemistry II	3
CHM 2046L	General Chemistry II Laboratory	1
CHM 2210	Organic Chemistry I	3
CHM 2210L	Organic Chemistry I Laboratory	1
PHY 2053	General Physics I	3
PHY 2053L	General Physics I Laboratory	1
PHY 2054	General Physics II	3
PHY 2054L	General Physics II Laboratory	1
MAC 2311	Analytic Geometry and Calculus I	4
STA 2023	Elements of Statistics	3

### Biology Core Courses (25 hours)

BSC 2844	Biology Skills	1
BCH 3033	Biochemistry I	3
BCH 3033L	Biochemistry I Laboratory	1
MCB 3020	Microbiology	3
MCB 3020L	Microbiology Laboratory	1
PCB 3063C	Genetics	4
PCB 3103	Cell Biology	3
PCB 3103L	Cell Biology Laboratory	1
PCB 3930	Biology Seminar Series	1
PCB 4043	Ecology	3
PCB 4043L	Ecology Lab	1
PCB 4673	Principles of Evolution	3
Total Hours		25

### Biology Elective Courses (12 hours)

#### (Advisor approved 12 hours at the 3000-4000 level)

The following is a suggested, but not inclusive, list of possible electives

PCB 3253	Developmental Biology	3
PCB 3253L	Developmental Biology Lab	1
PCB 4048C	Coastal Marine Ecology	4
PCB 4723	Comparative Animal Physiology	3
PCB 4723L	Comparative Animal Physiology Laboratory	1
PCB 4524	Molecular Biology	3
PCB 4524L	Molecular Biology Lab	1
BSC 4303	Biogeography	3
BOT 4374	Plant Developmental Biology	3
BOT 4374L	Plant Developmental Biology Laboratory	1
BOT 4503	Plant Physiology	3
BOT 4503L	Plant Physiology Laboratory	1
BOT 4850	Medicinal Botany	3
ZOO 4472	Avian Science	3
ZOO 4485	Marine Mammalogy	3
ZOO 4513	Animal Behavior	3

Academic Advisor for assistance in choosing courses to meet specific needs.

Biology, Marine Biology, and Zoo Science majors may not earn this minor.

BSC 2010+L	Biology I (+Lab)	4
BSC 2011+L	Biology II (+Lab)	4

Students should assess the prerequisites for upper division courses they wish to take to complete the minor.

3000/4000 level Biology (BCH, BOT, BSC, MCB, MLS, OCE, PCB, and ZOO) courses which includes at least one 4 sh lab courses	12
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Total Hours	20
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## Teacher Education Courses (27 hours)

EDF 3234	Applied Foundations of Education	3
EDG 2041	Exploring Inquiry Teaching	3
EDG 3323	General Methods of K-12 Reading Instruction	3
SCE 4320	Teaching Science in the Middle and Secondary Schools	3
ESE 4322	Instruction, Management, and Assessment: Secondary Education	3
TSL 4080	ESOL Principles and Practices	3
ESE 4940	Secondary Practicum	3
EDG 4940	Student Teaching	6
Total Hours		27

The upper-division courses (3000-4000 level) with the following prefixes will be used in calculating the major grade point average: BCH, BOT, BSC, PCB, MCB, ZOO, EDF, EDG, ESE, SCE, and TSL.

## Biology

A 20 sh Minor in Biology is available for students in a wide variety of majors.

It provides the opportunity to add value to the major degree and to expand their opportunities for employment. It is especially appropriate for students who plan to work in administrative or other nonresearch-related areas of the biomedical, environmental, pharmaceutical, and other biological science-related industries.

A minimum of 14 sh must be taken at UWF, including at least 9 sh of 3000/4000 course work taken in residence at UWF. A minimum grade of "C" is required in all courses used to satisfy the minor. Neither directed study nor credit by exam (AP, CLEP, etc.) may be applied toward the minor. Contact the Department of Biology