

## Bachelor of Arts in Biological Sciences

### (BIOL:BA)

PLEASE READ COURSE DESCRIPTIONS in the UNDERGRADUATE COURSE CATALOG (catalog.fiu.edu). Most elective courses have prerequisites that must be taken BEFORE you take the elective course. To see your own progress, you can view your Panther Degree Audit from your My FIU. If you need assistance or have any questions, you are encouraged to see an advisor prior to each registration period by making an appointment via the Panther Success Network. All Science and Math courses must be completed with a grade of "C" or better to satisfy the requirements.

#### Prerequisites (27 cr)

Course		Credits Hours
BSC 2010 & 2010L	General Biology I and Lab	3 + 1
BSC 2011 & 2011L	General Biology II and Lab	3 + 1
CHM 1045 & 1045L	General Chemistry I and Lab	3 + 1
CHM 1046 & 1046L	General Chemistry II and Lab	3 + 1
General Physics I	<b>Choose 1 course:</b> PHY2053 – Physics without Calculus I ( <i>Uses Algebra and Trigonometry</i> ) PHY2048 – Physics with Calculus II ( <i>Uses Calculus I and II</i> ) **	4
Mathematics	<b>Choose 1 option:</b> MAC 1147 – Pre-Calculus Algebra and Trigonometry (4 cr) MAC 2311 – Calculus I (4 cr) <i>Students should take MAC 1147. Only students who have started the MAC1114/MAC1140 sequence at their previous institution may request permission from the Math Department to get into the next course in the sequence.</i>	4
Statistics	<b>Choose 1 course:</b> STA 2023 - Statistical Methods *Consult with academic advisor to discuss the possibility of substituting this course with other approved Statistics course.	3

#### Upper Division Program (45 cr)

Course		Prerequisites (Grades of C or higher in)	Credits Hours
<b>Required Courses (13 credits):</b>			
BSC 3848	Science and Career Literacy	BSC2010 and BSC2011 <i>Course designed for biology majors in their junior year, this course prepares students for research, advanced coursework, and post-graduation pathways.</i>	1
PCB 3043	Ecology	BSC2010 and BSC2011	3
PCB 3063	Genetics	BSC2010	3
PCB 4674	Evolution	PCB3043 and PCB3063	3
BCH 3034	Cellular Chemistry	BSC2010, CHM1045 and CHM1045L	3
<b>Upper Division Biology Elective – Consult with advisor for course options (12 credits)</b>			
Upper Division Lectures	Biology Electives Students must complete 4 lecture courses from the acceptable Upper Division Biology Electives maintained by the Biology Department. The 4 lecture courses may be chosen at the student's discretion from courses in any of the distribution areas.  The following courses are not allowed as Biology BA Electives: BSC 4481, BSC 4482, Student Research Labs (BSC3915 and BSC4914); Cooperative Education credits; Biology of Women; Research Methods in Biological Sciences (BSC3910); and courses for non-science majors (BOT1010, MCB2000, BSC2023, EVR3013, OCB2000, and OCE3014)		12

Laboratory Requirement (2 credits)		
Upper Division Labs	<b>Choose two</b> upper-division labs ( <i>Note: 1-cr. labs count for one lab</i> )	2
Track Specific Courses		
Six courses in the specified track must be completed. Alternatively, students can complete a minor offered by a different department.		18

Health Policy, Environmental Policy and Pre-Law Track (HLTENVLAW)		
AMH 3630	Environmental History of the United States	3
CAP 2752	Fundamentals of Data Science	3
CJL 3512	The Courts	3
CJL 4064	Criminal Justice and the Constitution	3
COM 4462	Conflict Management	3
ECP 3302	Introduction to Environmental Economics	3
ENC 3311	Advanced Writing and Research	3
ENC 3354	Writing as Social Action	3
ENC 3371	Rhetorical Theory and Practice	3
ENC 4331	Writing, Rhetoric, and Community	3
ENC 4930	Special Topics in Composition	3
GEO 4354	Geography of the Global Food System - <b>GL</b>	3
INR 4350	International Environmental Politics	3
PAD 3034	Policy Development and Implementation	3
PHI 2100	Introduction to Logic	3
PHI 2103	Critical Thinking	3
PHI 4130	Symbolic Logic	3
POS 3283	The Judicial Process	3
POS 3603	Constitutional Law: Powers	3
POS 3604	Constitutional Law: Limitations	3
POS 4784	Analytic Writing in Political Science	3
REL 3492	Earth Ethics- <b>GL</b>	3
SPC 2237	Rhetorical Communication: A Theory of Civil Discourse	3
SPC 3540	Persuasion	3

Allied Health Profession Track		
ANT 3462	Medical Anthropology	3
ANT 4480	Anthropological Approaches to Global Health	3
APK 3110	Exercise Physiology	3
CAP 2752	Fundamentals of Data Science	3
CLP 4146	Psychopathology	3
DEP 2000	Human Growth and Development: Introductory Developmental Psychology	3
ECO 4504	Intro to Public Finance	3
HIS 4492	History of U.S. Health Policy	3
PAD 3034	Policy Development and Implementation	3
PCB 3703	Human Physiology I*	3
PCB 3703L	Human Physiology I Lab*	1
PCB 3702	Intermediate Human Physiology*	3
PCB3702L	Intermediate Human Physiology Lab*	1
POS 3424	The Legislative Process	3
HSC 3537	Medical Terminology	3
HSC 3549	Clinical Physiology for Health Professionals	3
HSC 4553	Fundamentals of Pathology	3
HUN 2201	Principles of Nutrition	3
PET 3310	Kinesiology	3
PSY 2012	Introductory Psychology	3
ZOO 3731	Human Anatomy*	3
ZOO 3731L	Human Anatomy Demonstration*	1

\* Students that take PCB3702+L, PCB3703+L, or ZOO3731+L to satisfy upper division Biology electives, cannot use those same courses for Allied Health Professions Track.

<b>Science Communication Track (SCICOM)</b>		
CAP 2752	Fundamentals of Data Science	3
COM 3110	Business and Professional Communication	3
ENC 3213	Professional and Technical Writing	3
ENC 3311	Advanced Writing and Research	3
ENC 3363	Writing About the Environment	3
ENC 3416	Writing and New Media	3
ENC 4241	Scientific Writing	3
ENC 4260	Advanced Professional Writing	3
ENC 4357	How To Go Public	3
IDS 2301	How We Know What We Know – <b>GL</b>	3
MMC 3121	Writing Fundamentals for Communicators	3
MMC 3650	Media and Sustainability	3
MMC 4936	Special Topics	3
JOU 3314	Environmental Journalism: Communicating Environmental Issues in South Florida	3

<b>Bioentrepreneur Track (BIOENTRP)</b>		
Students in this track must declare the Business Minor		
ACG 3024	Accounting for Managers and Investors (AC) Prerequisite: Bioentrepreneur Track	3
FIN 3005	Introduction to Business Finance Prerequisite: Bioentrepreneur Track	3
ISM 3012	Introduction to Decision and Information Systems (IS) Prerequisite: Business Minors only.	3
MAN 3022	Introduction to Management Prerequisite: Business Minors	3
MAR 3024	Marketing Fundamentals (ME) Prerequisite: Business Minors or Bioentrepreneur Track Only	3
<b>Choose one of the following:</b>		
CAP 2752	Fundamentals of Data Science	3
COM 3110	Business and Professional Communication	3
HAS 3111	Introduction to Health Services Systems	3

Biology Education Track is also an option for the Biological Sciences BA program. Students interested in the Biology Education Track and teaching secondary biology should make an appointment with a Secondary Education Academic Advisor: 305-348-2978

### ELECTIVES COURSES - DISTRIBUTION REQUIREMENT

**BSC 4473C - Introduction to Scientific Diving Prerequisites:** (OCB3043+lab or PCB3043+lab or CHS4600 or OCE3014), open water diving certification, permission of the instructor, FIU Diving Medical clearance, pass standardized swim test, at least 18 years old. Lab fee of \$1,158 applied.

**BSC 3941 - Biological Sciences Research Internship:** Supervised, practical experience in a professional, laboratory or field setting in which biologists may work. Instructor permission is required. This does NOT fulfill any lab or elective lecture requirement for Biology Majors or Minors.

The following are **Upper Division Biology labs** with no lecture component:

- BSC 3441L - Phage Genomics Lab (not available for students that previously took BSC 3994L- Phage Genomics Lab) (Prerequisites: BSC 2010 and BSC 2010L)
- BSC 3456L - Python for Biologists Lab (not available for students that previously took BSC 3993L - Python Lab) (Prerequisites: BSC 2010, BSC 2011)
- BSC 3466L - Make Your Mutant (Corequisite: PCB 3063 or BCH 3033)
- BSC 4450L - Computational Biology Lab of Emerging Infectious Disease (not available for students that previously took BSC 4996L - Computational Biology Lab of Emerging Infectious Disease) (Prerequisites: PCB 3063 or BCH 3033)
- BSC 4990L - SEA GENES (Prerequisites: Instructor Consent Required)

#### A. Ecology Distribution

- BOT4601 – General Plant Ecology (3)
- BOT4601L - General Plant Ecology Lab (1)
- BSC4303 – Biogeography (3)

#### Prerequisites

PCB3043  
BOT4601  
PCB3043, PCB4674

● BSC4304 - Environments of the Past (3)	
● BSC4363 - Biodiversity in the Caribbean Basin (3)	BSC2010, BSC2011
● MCB4603 - Microbial Ecology (3)	MCB 3020
● MCB4603L - Microbial Ecology Lab (1)	MCB 3020+L, MCB4603
● OCB3043 - Marine Biology & Oceanography (3)	BSC2010, BSC2011
● OCB3043L - Marine Biology & Oceanography Lab (1)	OCB3043
● OCB3075C - Mariculture for Conservation and Restoration (4)	
● OCB3264 - Coral Reef Biology (3)	BSC2011
● OCB4004 - Biological Oceanography at Sea I (3)	OCB3043
● OCB4005C - Biological Oceanography at Sea II (4)	OCB4004
● OCB4070 - Coastal Marine Conservation (3)	OCB3043 or PCB3043
● OCB4104C - Field Methods in Marine Ecology (4)	OCB3043 or PCB3043
● OCB4633 - Marine Community Ecology (3)	PCB3043
● OCB4711 - Fisheries Science (3)	BSC2010, BSC2011
● PCB3374 - Tropical Ecology (3)	PCB3043
● PCB4301 - Freshwater Ecology (3)	PCB3043
● PCB4401 - Global Change Ecology: How humans changed the face of Earth (3)	PCB3043
● PCB4403C - Urban Vector Biology (4)	BSC 2010+L, BSC2011+L
● PCB4414 - Behavioral Ecology (3)	PCB3043
● PCB4452 - Introduction to Wetland Ecology and Management (3)	PCB3043
● PCB4462C - Introduction to Landscape Ecology with GIS (4)	BSC2010, BSC2011, PCB3043
● PCB4467C - Marine Protected Areas (4)	BSC2010 and BSC2011
● PCB4553 - General Population Genetics (3)	PCB3063
● PCB4673 - Evolutionary Ecology (3)	PCB3043, PCB3063
● PCB4932 - Topics in Ecology (3)	BSC2010+L, BSC2011+L
● ZOO4513 - Animal Behavior (3)	BSC2010, BSC2011
● ZOO4513L - Animal Behavior Laboratory (2)	ZOO4513

## **B. Organismal Diversity Distribution**

● BOT3154 - Local Flora (3)	BOT1010 or BSC2011, BOT3154L
● BOT3154L - Local Flora Lab (1)	BOT1010 or BSC1011, BOT3154
● BOT3663 - Tropical Botany (3)	BSC2011
● BOT3810 - Economic Botany (3)	BSC2011 or BOT1010
● BOT4402 - Marine Botany (3)	BSC2011
● BOT4404C – Phycology (4)	BSC2010, BSC2011
● BOT4404L - Phycology Lab (1)	BSC2010, BSC2011, BOT4404
● BOT4684 - Taxonomy of Tropical Plants (3)	BOT3154 or BOT3663
● BOT4684L - Taxonomy of Tropical Plants Lab (1)	BOT4684
● BSC3400 - Wildlife Conservation, Forensic and Crime Science (3)	BSC2010, BSC2011
● BSC4205 - Topics in Organismal Diversity (3)	BSC2010+L, BSC2011+L
● BSC4434 - Bioinformatics for Biologists (3)	BSC2010, BSC2011, PCB3063
● BSC4480 - Introduction to Veterinary Medicolegal and Live Animal Forensic Investigations (3)	
● ENY4060 – Entomology (3)	BSC2010, BSC2011
● ENY4060L - Entomology Lab (1)	ENY4060
● MCB3020 - General Microbiology (3)	CHM2210, BSC2010, BSC2011
● MCB3020L - General Microbiology Lab (1)	MCB3020
● MCB4022 - Diversity of Microbes (3)	MCB3020

## **Prerequisites**

• OCB4303 - Biology of Marine Mammals (3)	PCB3043 or OCB3043
• PCB4676 - Human Evolution (3)	BSC2011 and PCB3063
• ZOO3205C - Invertebrate Zoology (4)	BSC1011
• ZOO3303 - Vertebrate Zoology (3)	BSC2010+L, BSC2011+L
• ZOO3303L - Vertebrate Zoology Lab (1)	ZOO3303
• ZOO4234 - General Parasitology (3)	BSC2010, ZOO4234L
• ZOO4234L - General Parasitology Lab (1)	BSC2010, ZOO4234
• ZOO4454 - Fish Biology (3)	BSC2010, BSC2011, PCB3043
• ZOO4462C - Herpetology (4)	BSC2010, BSC2011, PCB3043
• ZOO4484 - Primate Biology (3)	BSC2010, BSC2011
• ZOO4484L - Primate Biology Lab (1)	ZOO4484

### C. Physiology/Biochemistry Distribution

### Prerequisites

• BCH3033 - General Biochemistry (3)	CHM2211, BSC2010
• BCH3033L - Gen. Biochemistry Lab (1)	CHM2211, BSC2010, BCH3033
• BOT4503 - Plant Physiology (3)	BSC2010, BSC2011, CHM1045, CHM1046
• BOT4503L - Plant Physiology Lab (1)	BOT4503
• BSC4443 - Functional Genomics and Proteomics (3)	PCB3063
• MCB4503 - Virology (3)	CHM2210, PCB3063
• PCB3702 - Intermediate Human Physiology (3)	BSC2010 or BSC2011
• PCB3702L - Intermediate Human Physiology Lab (1)	BSC2010 or BSC2011, PCB3702
• PCB3703 - Human Physiology I (3)	BSC2010
• PCB3703L - Human Physiology Lab I (1)	PCB3703
• PCB3704 - Human Physiology II (3)	BSC2010
• PCB3704L - Human Physiology Lab II (1)	PCB3704
• PCB4232 - The Biology of Acquired Immune Deficiency Syndrome (AIDS) (3)	BSC2010, BSC2011, CHM1045, CHM1046
• PCB4233 - Immunology (3)	PCB3063
• PCB4234 - Biology of Cancer (3)	PCB3063, PCB3043
• PCB4524 - Molecular Biology (3)	PCB3063, (BCH3033 or CHM4304)
• PCB4524L - Molecular Biology Lab (1)	PCB4524
• PCB4717 - Topics in Physiology/Biochemistry (3)	BSC2010+L, BSC2011+L
• PCB4723 - Animal Physiology (3)	BSC2010, BSC2011
• PCB4724 - Comparative Physiology (3)	BSC2010, BSC2011, CHM2210
• PCB4776 - Physiological and Behavioral Ecology of Marine Animals (3)	BSC2010, BSC2011, PCB3043
• PCB4805 - Endocrinology (3)	BSC2011, one physiology course
• PCB4810 - Biology of Stress (3)	BSC2010, BSC2011
• ZOO4744 - Neurobiology (3)	BSC2010, BSC2011
• ZOO4781 - Sensory Systems in Neurobiology (3)	BSC2010, BSC2011

### D. Structure/Development Distribution

### Prerequisites

• BOT3353 - Morphology of Vascular Plants (3)	BSC2010
• BOT3353L - Morphology of Vascular Plants Lab (1)	BOT3353
• BSC4401 - Principles of Forensic Biology (3)	BSC2010
• BSC4401L - Principles of Forensic Biology Lab (1)	PCB3063, BSC4401
• BSC4422 - Biotechnology: Applications in Industry, Agriculture and Medicine (3)	BSC4422
• BSC 4422L - Biotechnology Laboratory (1)	BSC2010, BSC2011
• PCB3660 - Sex, Gender, and Orientation: A Biological Perspective (3)	BSC2010+L, BSC2011+L
• PCB4133 - Topics in Structure/Development (3)	PCB3063 or BCH3033
• PCB4253 - Developmental Biology (3)	BSC1011, PCB3063
• PCB4561 - Epigenetics (3)	PCB3063
• PCB4663 - General Human Genetics (3)	BSC2010+L, BSC2011+L
• ZOO3603 - Embryology (3)	ZOO3603
• ZOO3603L - Embryology Lab (1)	BSC2010, BSC2011
• ZOO3713C - Comparative Vertebrate Anatomy (4)	BSC2010, BSC2011

- ZOO3731 - Human Anatomy (3) (BSC2010, BSC2023, MCB2000, or HSC3549), & ZOO3731L
- ZOO3731L - Human Anatomy Demonstration (1) ZOO3731
- ZOO3753 – Histology (3) BSC2010, BSC 2011, ZOO 3753L
- ZOO3753L - Histology Lab (1) BSC2010, BSC 2011, ZOO3753
- ZOO4733 - Survey of Regional Anatomy (3) BSC2011+L, CHM1046+L, (PHY2048 or PHY 2053)
- ZOO4743C – Neuroscience (4) BSC2010, BSC2011, CHM2211

### **Other Graduation Requirements:**

#### **University Requirements**

- UCC –University Core Curriculum (Note: Transfer students with an AA degree from a Florida College System or other Florida State University are exempt from the UCC).
  - FLENT/FLEX Foreign Language requirement
  - Summer Enrollment: Students entering the University with fewer than 60 hours must complete 9 hours of coursework during the summer semester
  - Civic Literacy Requirement
  - Global Learning Requirement (consider using upper division courses here)
  - 120 Total credit hours required
- For more information on these requirements, please visit: <https://transfer.fiu.edu/transfer-101/guides-resources/graduation-requirements/index.html>

#### **College of Arts, Sciences & Education Requirements**

- 45 Upper Division hours required
- 9 Credit hours of courses outside the major required within the last 60 hours of enrollment

**Success Markers:** The Biological Sciences Department has identified important courses in the major that indicate you are on track for successful degree completion. ***In cases where students are not making good progress, a change of major may be required.***

- 30 credits- Complete MAC 1105 (or higher) with a C or better
- 30 credits- Complete CHM 1045/CHM 1045L with a C or better
- 45 credits- Enroll in MAC 1147 (or higher)
- 45 credits- Complete BSC 2010/2010L or BSC 2011/2011L with a C or better
- 45 credits- Complete CHM 1046/1046L with a C or better
- 60 credits- Enroll in PHY 2048 or PHY 2053
- 75 credits- Complete PHY 2048 or PHY 2053 with a C or better

**Minor in Biology:** The requirements to complete a Minor in Biology can be found here: <https://case.fiu.edu/advising/case-minor/biology-minor.pdf>