

**Department of Biological Sciences**

**BACHELOR OF SCIENCE**

**PROGRAM OF STUDY**

**(BIOL:BS)**

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 Biology faculty members serve as biology career advisors and have designated advising times. All Science and Math courses must be completed with a grade of "C" or better to satisfy the requirements. **The Biological Sciences BS has enrollment and completion success markers that will be used to monitor your progress in the major. In cases where students are not making good progress, a change of major may be required.**

**LOWER DIVISION PROGRAM**

- 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).
- GLOBAL LEARNING REQUIREMENT at Foundation Level and In-field/Discipline Specific Level (consider using upper division courses here)
- Civic Literacy Requirement (see page 4)
- Students entering the University with fewer than 60 hours must complete 9 hours of coursework during the summer semester
- Foreign Language requirement (see page 4)
- General Science Requirements** (also called Common Prerequisites)

<u>General Science Courses</u>	<u>FIU ( ) = credit hours</u>	<u>BC or MDC equivalent</u>	<u>UM Equivalent</u>
<input type="checkbox"/> General Biology I and II	BSC 2010(3)+Lab(1) BSC 2011(3)+Lab(1)	BSC 2010+Lab or BOT 1010+Lab BSC 2011+Lab ZOO 1010+Lab	BIL 150 +151Lab BIL 160 + 161Lab
<input type="checkbox"/> General Chemistry I and II	CHM 1045(3)+Lab(1) CHM 1046(3)+Lab(1)	CHM 1045+Lab or CHM 1040+Lab CHM 1046+Lab CHM 1041+Lab	CHM 111 + 113Lab CHM 112 + 114Lab
<input type="checkbox"/> Organic Chemistry I and II	CHM 2210(4)+Lab(1) CHM 2211(3)+Lab(1)*	CHM 2210+Lab CHM 2211+Lab	CHM 201 + 205Lab CHM 202 + 206Lab
<input type="checkbox"/> General Physics I and II	PHY 2053(4)+2048L(1) PHY 2054(4)+2049L(1)* using algebra and trigonometry or PHY 2048(4)+Lab(1) PHY 2049(4)+Lab(1)* using Calculus 1 and 2.	PHY 2053+Lab PHY 2054+Lab  PHY 2048+Lab PHY 2049+Lab	PHY 101 + 106Lab PHY 102 + 108Lab

**\*Fundamentals of Data Science - CAP 2752(3)**, can be used to substitute either Organic Chemistry II or Physics II. Please check with your advisor to confirm this course falls in the appropriate category on the degree audit; also confirm whether this course is appropriate for career goals.

- Mathematics - Students must complete sub-requirements (A) and (B)
 

(A) Calculus I	MAC 2311(4)	MAC 2311	MTH 111 or MTH 131
<i>Students should take MAC 1147 as a prerequisite for MAC2311. 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>			
(B) Calculus II	MAC 2312(4)	MAC 2312	MTH 112 or MTH 132
or			
Statistics I and II	STA 3111(3) & 3112(3)	Stats designed for Biology students.	
or			
	STA 2122(3) & 3123(3)	Stats designed for Psychology students	

**Note:** Calculus I and Statistics I together do not satisfy the requirement  
STUDENTS WHO TAKE STATISTICS I AND II MUST ALSO COMPLETE CALCULUS I

## UPPER DIVISION PROGRAM

<input type="checkbox"/> Required Courses	Prerequisites	Credits
<input type="checkbox"/> PCB 3043 Ecology (L*)	BSC 2010 + 2011	3
<input type="checkbox"/> PCB 3063 Genetics (L*)	BSC 2010	3
<input type="checkbox"/> PCB 4023 Cell Biology (L*)	PCB 3063 + CHM 1046	3
<input type="checkbox"/> PCB 4674 Evolution	PCB 3043 + PCB 3063	3
<input type="checkbox"/> BSC 4931 Senior Seminar	PCB 3043+3063+4023+4674	<u>1</u>
		13

<input type="checkbox"/> <b>6 Upper Division Elective Courses</b> - Distribution Requirement - One Elective lecture course in each of the following Areas**		
<input type="checkbox"/> A. Ecology Area		3
<input type="checkbox"/> B. Organismal Diversity Area		3
<input type="checkbox"/> C. Physiology/Biochemistry Area		3
<input type="checkbox"/> D. Structure/Development Area		3
+ 2 upper division electives in any of these Areas		<u>6</u>
		18

<input type="checkbox"/> <b>Laboratory Requirement</b> - 4 Upper Division Labs (2cr labs=1 lab)	4 or more
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Please take labs that support upper division courses needed for your career goals

### College of Arts, Sciences, and Education Requirements

<input type="checkbox"/> Credit hours of courses outside the major required within the last 60 hours of enrollment	
<b>Note:</b> Take these 9 credit hours from upper division courses to help you reach the 45 hours needed for graduation Ex. 35 + 9 = 44 upper division credit hours	9
<input type="checkbox"/> Upper Division hours required	45
<input type="checkbox"/> Total credit hours required for graduation (University Requirement)	120

\*\* See next page for a list of elective courses to choose from.

Please note that there may be limited course availability in summer.

\*\*\*Refer to course catalog for list of courses not applicable to the upper division Major electives.

Students interested in Teacher Certification should contact the CASE Advising office at 305-348-2978 for the more information about **Biology Secondary Education** track.

## ELECTIVES COURSES - DISTRIBUTION REQUIREMENT –Summer and Fall 2023

**(L\*)-Indicates that lab is being offered this term along with the lecture**

**Courses listed may be subject to change. Please confirm course availability by searching for courses on your MyFIU.**

**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 Biology BA courses are **NOT** applicable to Biology BS students: BCH3034, BSC2077, and BSC3848. The non-major courses of BSC2085+L and BSC2086+L are also **NOT** applicable to Biology BS majors.

- **BSC 4450L - Computational Biology Lab of Emerging Infectious Disease (not available for students that already took BSC 4996L - Computational Biology Lab of Emerging Infectious Disease)** (Prerequisites: PCB 3063 or BCH 3033): Being offered **Summer and Fall 2023**.
- **BSC 3466L - Make Your Mutant** (Corequisite: PCB 3063 or BCH 3033): Being offered **Fall 2023**.

## A. ECOLOGY

	Summer 2023	Prerequisites (Grades of C or higher in)
BSC 4363	Biodiversity in the Caribbean Basin	BSC2010, BSC2011
PCB 4467C	Marine Protected Areas <b>GL</b>	BSC2010 and BSC2011
	Fall 2023	Prerequisites (Grades of C or higher in)
BOT 4601	General Plant Ecology <b>GL</b>	PCB3043
BSC 4303	Biogeography	PCB 3043 and PCB 4674
BSC 4363	Biodiversity in the Caribbean Basin	BSC2010, BSC2011
OCB 3043	Marine Biology Oceanography (*L)	BSC2010, BSC2011
OCB 3075C	Mariculture for Conservation and Restoration	
OCB 4104C	Field Methods in Marine Ecology	OCB3043 or PCB3043
OCB 4633	Marine Community Ecology	PCB3043

PCB	3374	Tropical Ecology	PCB3043
PCB	4301	Freshwater Ecology	PCB3043
PCB	4401	Global Change Ecology: How humans changed the face of Earth	PCB3043
PCB	4467C	Marine Protected Areas <b>GL</b>	BSC2010 and BSC2011
PCB	4932	Topics in Ecology: Species Distribution Modeling: Understanding the past and future of biodiversity with machine learning	BSC2010, BSC2010L and BSC2011, BSC2011L

## B. ORGANISMAL DIVERSITY

<b>Summer 2023</b>			<b>Prerequisites (Grades of C or higher in)</b>
MCB	3020	General Microbiology (*L)	CHM2210, BSC2010, and BSC2011
ZOO	4234	General Parasitology (*L)	BSC 2010, Corequisite: ZOO4234L
<b>Fall 2023</b>			<b>Prerequisites (Grades of C or higher in)</b>
BOT	3663	Tropical Botany	BSC2011
BOT	4404	Phycology (*L)	BSC2010, BSC2011
BSC	4434	Bioinformatics for Biologists	BSC2010, BSC2011, PCB3063
MCB	3020	General Microbiology (*L)	CHM2210, BSC2010, and BSC2011
OCB	4303	Biology of Marine Mammals	PCB3043 or OCB3043
ZOO	3205C	Invertebrate Zoology	BSC1011
ZOO	4234	General Parasitology (*L)	BSC 2010, Corequisite: ZOO4234L

## C. PHYSIOLOGY/BIOCHEMISTRY

<b>Summer 2023</b>			<b>Prerequisites (Grades of C or higher in)</b>
BCH	3033	General Biochemistry (*L)	CHM2211, BSC2010
CHM	4304	Biological Chemistry I (*L)	CHM2211, CHM2211L
MCB	4503	Virology	CHM2210, PCB3063
PCB	4233	Immunology	PCB3063
PCB	4232	Biology of Cancer	PCB3063, PCB3043
<b>Fall 2023</b>			<b>Prerequisites (Grades of C or higher in)</b>
BCH	3033	General Biochemistry (*L)	CHM2211, BSC2010
BOT	4503	Plant Physiology (*L) <b>GL</b>	BSC2010, BSC2010L, BSC2011, CHM2210
CHM	4304	Biological Chemistry I (*L)	CHM2211, CHM2211L
PCB	3702	Intermediate Human Physiology (L*)	BSC2010 or BSC2011
PCB	4232	Biology of AIDS	BSC2010, BSC2011, CHM1045, CHM1046
PCB	4233	Immunology	PCB3063
PCB	4717	Topics in Physiology/Biochemistry: Biochemical Ecology	BSC2010, BSC2010L and BSC2011, BSC2011L
PCB	4810	Biology of Stress	BSC2010 and BSC2011
ZOO	4744	Neurobiology	BSC2010 and BSC2011

## D. STRUCTURE/DEVELOPMENT

<b>Summer 2023</b>			<b>Prerequisites (Grades of C or higher in)</b>
BSC	4401	Principles of Forensic Biology (*L)	BSC2010
BSC	4422	Biotechnology: Applications in Industry, Agriculture and Medicine (*L)	
PCB	4253	Developmental Biology	PCB3063 or BCH3033
PCB	4663	General Human Genetics	PCB3063
ZOO	3731	Human Anatomy (*L)	BSC 2010 or BSC 2023 or PCB 2099 or MCB 2000 or HSC 3549 Corequisite: ZOO3731L
ZOO	4733	Survey of Regional Anatomy	BSC2011, BSC2011L, CHM1046, CHM1046L, PHY2054
<b>Fall 2023</b>			<b>Prerequisites (Grades of C or higher in)</b>
BSC	4422	Biotechnology: Applications in Industry, Agriculture and Medicine (*L)	
PCB	4253	Developmental Biology	PCB3063 or BCH3033
PCB	4663	General Human Genetics	PCB3063
ZOO	3713C	Comparative Vertebrate Anatomy	BSC2010, BSC2011
ZOO	3731	Human Anatomy (*L)	BSC 2010 or BSC 2023 or PCB 2099 or MCB 2000 or HSC 3549 Corequisite: ZOO3731L
ZOO	4733	Survey of Regional Anatomy	BSC2011, BSC2011L, CHM1046, CHM1046L, PHY2054

## Transfer Students

Transfer students with >60 credits, must take half of their upper division credits at FIU. A **maximum** of 60 lower division semester hours taken at a two-year or a four-year institution may be counted toward the degree. A maximum of 30 upper division semester hours taken at a senior institution may be counted toward the degree. Lower division courses in excess of 60 semester hours may serve to meet specific course requirements for the degree, but credit hours represented by these courses **will not** reduce the number of credit hours to be completed at the University.

## Foreign Language requirement

FIU Flent/Flex requirement – 2 years of high school foreign language satisfy Flent/Flex. All students graduating from Florida International University must meet the state-mandated foreign language requirement. The FLENT/FLEX requirement can be met if students have completed two years of the same foreign language in high school prior to their admission to FIU.

Transfer students may also qualify for an exemption with ANY of the following:

- Appropriate accelerated credit mechanisms (e.g., AP, A-Level, IB, CLEP)
- Transfer credits from a post-secondary institution,
- Two consecutive semesters of one language (levels 1 & 2)
- One intermediate or advanced level language course
- A passing TOEFL score for admission to the University
- Foreign Credentials (e.g High School transcript from Non-English speaking country)
- A previously earned Bachelor's degree (regionally accredited)
- An AA degree earned at a FL public institution prior to 1989

Students that do not qualify for any of the above exemptions must complete the foreign language requirement here at FIU, using one of the following options:

- Two introductory level courses (levels 1 & 2)
- One intermediate or advanced level course
- CLEP (Spanish, French and German only)
- FLATS (visit <https://info.flats.byu.edu/list-of-languages/> to view the complete list of FLATS exams)

## Civic Literacy Requirement

The Civic Literacy Competency Requirement is a statewide mandate that applies to degree-seeking undergraduate students initially entering a Florida State University System (SUS) or Florida College System (FCS) institution in the 2018-19 academic year and thereafter. The requirement has been updated for degree-seeking undergraduate students initially entering the SUS or FCS in the 2021-2022 academic year (Summer B term) and thereafter.

**There are now 3 Cohorts of students:**

Students Included in Cohort	Civic Literacy Competency Requirement
• Cohort 1: Students first entering the SUS or FCS prior to fall 2018	None
• Cohort 2: Students first entering the SUS or FCS in fall 2018 summer A 2021	Complete a course or exam
• Cohort 3: Students first entering the SUS or FCS in summer B 2021 and thereafter	Complete both a course and exam

### Notes:

1. As you can see from the above table, students in Cohort 3 (initially entering an SUS or FCS Summer B 2021 and thereafter) must now complete both a course and an exam
2. Students in Cohort 2 need only to complete the course or exam
3. Students in Cohort 1 do not need to complete the Civic Literacy Competency requirement

To view a table that provides details on which options meet which competency, please visit: [https://transfer.fiu.edu/transfer-101/graduation-requirements/Transfer\\_Students](https://transfer.fiu.edu/transfer-101/graduation-requirements/Transfer_Students)

The Civic Literacy requirement applies to transfer students who are initially entering a Florida State University System (SUS) or Florida College System (FCS) institution starting in the 2018-19 academic year. Students who transfer from an institution outside the SUS or FCS starting in the 2018-19 academic year, and have not satisfied this requirement, must do so prior to graduation. Transfer courses outside those approved and offered by SUS or FCS institutions may not be used to satisfy this requirement. Students who earned an Associate in Arts (AA) degree from a Florida SUS or FCS institution prior to the 2018-19 academic year are not required to satisfy this requirement because they are not initially entering the Florida SUS or FCS in the 2018-19 academic year.

## Minor in Biology

- BSC 2010/BSC 2010L and BSC 2011/BSC 2011L
- One upper-division course (3000-level or above) in three of the following areas: **A. Ecology, B. Organismal Diversity, C. Physiology/Biochemistry, or D. Structure/Development**
- One of these elective courses must be at the 4000 level or higher
- One course must include a lab
- Minimum 10 upper-division biology credits

\*The following courses also satisfy the areas listed above: **A.** PCB 3043 Ecology, **B.** PCB 4674 Evolution, **C.** PCB 4023 Cell Biology, **D.** PCB 3063 Genetics

## Pre-Medical, Dental, Optometry, Physician Assistant, Pharmacy, Podiatry and Veterinary Curricula

Students who have fulfilled the requirements for the BS in Biology will also have satisfied most of the course requirements for admission to the above mentioned professional schools. Interested students should consult a Pre-Medical Advisor (DM 337; 305-348-0515; preprof@fiu.edu) for arranging a curriculum to enhance their potential to gain admission to these professional schools.

**Enrollment Status – for continuous enrollment in a semester, dropping courses can change enrollment status. Contact the Registrar for more details. Contact Financial Aid for various regulations.**

Full time = 12 to 18 credits. Normal load = 15 credits; registration for more than 18 credits requires Dean Designee Approval.

Half time = 6-11 credits; Less than Half time = 5 credits or less.