**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)*

<table>
<thead>
<tr>
<th>General Science Courses</th>
<th>FIU ( ) = credit hours</th>
<th>BC or MDC equivalent</th>
<th>UM Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Biology I and II</td>
<td>BSC 2010(3)+Lab(1)</td>
<td>BSC 2010+Lab or BOT 1010+Lab</td>
<td>BIL 150 +151Lab</td>
</tr>
<tr>
<td></td>
<td>BSC 2011(3)+Lab(1)</td>
<td>BSC 2011+Lab ZOO 1010+Lab</td>
<td>BIL 160 + 161Lab</td>
</tr>
<tr>
<td>General Chemistry I and II</td>
<td>CHM 1045(3)+Lab(1)</td>
<td>CHM 1045+Lab or CHM 1040+Lab</td>
<td>CHM 111 + 113Lab</td>
</tr>
<tr>
<td></td>
<td>CHM 1046(3)+Lab(1)</td>
<td>CHM 1046+Lab CHM 1041+Lab</td>
<td>CHM 112 + 114Lab</td>
</tr>
<tr>
<td>Organic Chemistry I and II</td>
<td>CHM 2210(4)+Lab(1)</td>
<td>CHM 2210+Lab</td>
<td>CHM 201 + 205Lab</td>
</tr>
<tr>
<td></td>
<td>CHM 2211(3)+Lab(1)</td>
<td>CHM 2211+Lab</td>
<td>CHM 202 + 206Lab</td>
</tr>
<tr>
<td>General Physics I and II</td>
<td>PHY 2053(4)+2048L(1)</td>
<td>PHY 2053+Lab</td>
<td>PHY 101 + 106Lab</td>
</tr>
<tr>
<td></td>
<td>PHY 2054(4)+2049L(1)</td>
<td>PHY 2054+Lab using algebra and trigonometry or PHY 2048(4)+Lab(1)</td>
<td>PHY 102 + 108Lab</td>
</tr>
<tr>
<td></td>
<td>PHY 2049(4)+Lab(1)</td>
<td>PHY 2049+Lab using Calculus 1 and 2.</td>
<td></td>
</tr>
<tr>
<td>Mathematics - Students must complete sub-requirements (A) and (B)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(A) Calculus I</td>
<td>MAC 2311(4)</td>
<td>MAC 2311</td>
<td>MTH 111 or MTH 131</td>
</tr>
<tr>
<td>(B) Calculus II or Statistics I and II</td>
<td>MAC 2312(4)</td>
<td>MAC 2312</td>
<td>MTH 112 or MTH 132</td>
</tr>
<tr>
<td>or Statistics I and II</td>
<td>STA 3111(3) &amp; 3112(3)</td>
<td>Stats designed for Biology students. or STA 2122(3) &amp; 3123(3)</td>
<td>Stats designed for Psychology students</td>
</tr>
</tbody>
</table>

**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

### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Prerequisites</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCB 3043 Ecology (L*)</td>
<td>BSC 2010 + 2011</td>
<td>3</td>
</tr>
<tr>
<td>PCB 3063 Genetics (L*)</td>
<td>BSC 2010</td>
<td>3</td>
</tr>
<tr>
<td>PCB 4023 Cell Biology (L*)</td>
<td>PCB 3063 + CHM 1046</td>
<td>3</td>
</tr>
<tr>
<td>PCB 4674 Evolution (L*)</td>
<td>PCB 3043 + PCB 3063</td>
<td>3</td>
</tr>
<tr>
<td>BSC 4931 Senior Seminar</td>
<td>PCB 3043+3063+4023+4674</td>
<td>1</td>
</tr>
</tbody>
</table>

### Prerequisites

- PCB 3043
- PCB 3063
- PCB 4023
- PCB 4674
- BSC 4931

### Credits

- PCB 3043: 3 credits
- PCB 3063: 3 credits
- PCB 4023: 3 credits
- PCB 4674: 3 credits
- BSC 4931: 3 credits

### 6 Upper Division Elective Courses

- **A. Ecology Area**
  - PCB 3374 Tropical Ecology [MMC] PCB 3043

- **B. Organismal Diversity Area**
  - OCB 3043 Marine Biology Oceanography (L*) [BBC] BSC 2010, BSC 2011

- **C. Physiology/biochemistry Area**
  - OCB 4070 Coastal Marine Conservation [BBC] OCB 3043 or PCB 3043

- **D. Structure/development Area**
  - PCB 4414 Behavioral Ecology [MMC] PCB 3043

**Note:** 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. **Upper Division hours required:** 45, **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 Candice Morris at camorris@fiu.edu for the more information about Biology Secondary Education track.**

### Laboratory Requirement

- 4 Upper Division Labs (2cr labs=1 lab) 4 or more

Please take labs that support upper division courses needed for your career goals.

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

- Credit hours of courses outside the major required within the last 60 hours of enrollment
- **Note:** 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

**Upper Division hours required:** 45

**Total credit hours required for graduation (University Requirement):** 120

### ELECTIVES COURSES - DISTRIBUTION REQUIREMENT – Summer 2020 and Fall 2020

(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.

**Additional Lab: BSC 3466L - Make Your Mutant. The pre/corequisites are Genetics (PCB3063) Or Biochemistry (BCH3033)**

### A. ECOLOGY

#### Summer 2020

<table>
<thead>
<tr>
<th>Course</th>
<th>Prerequisites (Grades of C or higher in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC 4363 Biodiversity in the Caribbean Basin [MMC]</td>
<td>BSC2010, BSC2011</td>
</tr>
<tr>
<td>PCB 4232 The Biology of AIDS [BBC]</td>
<td>BSC 2010, BSC2011, CHM1045, and CHM1046</td>
</tr>
</tbody>
</table>

#### Fall 2020

<table>
<thead>
<tr>
<th>Course</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOT 4601 General Plant Ecology (L*) [MMC] GL</td>
<td>PCB 3043</td>
</tr>
<tr>
<td>BSC 4304 Environments of the Past [MMC]</td>
<td></td>
</tr>
<tr>
<td>BSC 4363 Biodiversity in the Caribbean Basin [MMC]</td>
<td>BSC2010, BSC2011</td>
</tr>
<tr>
<td>OCB 3043 Marine Biology Oceanography (L*) [BBC]</td>
<td>BSC2010, BSC2011</td>
</tr>
<tr>
<td>OCB 4070 Coastal Marine Conservation [BBC]</td>
<td>OCB3043 or PCB3043</td>
</tr>
<tr>
<td>OCB 4104C Field Methods in Marine Ecology [BBC]</td>
<td>OCB3043 or PCB3043</td>
</tr>
<tr>
<td>PCB 3374 Tropical Ecology [MMC]</td>
<td>PCB3043</td>
</tr>
<tr>
<td>PCB 4414 Behavioral Ecology [MMC]</td>
<td>PCB3043</td>
</tr>
<tr>
<td>PCB 4467C Marine Protected Areas [MMC, Online] GL</td>
<td>BSC2010 and BSC2011</td>
</tr>
</tbody>
</table>
**B. ORGANISMAL DIVERSITY**

**Summer 2020**
- BSC 4434 Bioinformatics for Biologists [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010, BSC2011, PCB3063
- MCB 3020 General Microbiology (L*) [MMC]  
  Prerequisites (Grades of C or higher in): CHM2210, CHM2211, BSC2010, and BSC2011
- ZOO 4234 General Parasitology (L*) [MMC]  
  Prerequisites (Grades of C or higher in): BSC 2010, Corequisite: ZOO4234L

**Fall 2020**
- BOT 3154 Local Flora (L*) [Fairchild Tropical Garden]  
  Prerequisites (Grades of C or higher in): BSC2010, BSC2010L and BSC2011, BSC2011L
- BOT 3663 Tropical Botany [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010, BSC2010L and BSC2011, BSC2011L
- BSC 4205 Topics in Organismal Diversity: Great Ape Conservation [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010, BSC2010L and BSC2011, BSC2011L
- BSC 4435 Bioinformatics for Biologists [Online]  
  Prerequisites (Grades of C or higher in): BSC2010, BSC2010L and BSC2011, BSC2011L
- MCB 3020 General Microbiology (L*) [MMC]  
  Prerequisites (Grades of C or higher in): CHM2210, CHM2211, BSC2010, and BSC2011
- OCB 4303 Biology of Marine Mammals [Online]  
  Prerequisites (Grades of C or higher in): BSC2011 and PCB3063
- PCB 4676 Human Evolution [MMC]  
  Prerequisites (Grades of C or higher in): BSC2011 and PCB3063
- ZOO 3205C Invertebrate Zoology [BBC]  
  Prerequisites (Grades of C or higher in): BSC2010 and PCB3063
- ZOO 3303 Vertebrate Zoology [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010, BSC2010L, and BSC2011, BSC2011L
- ZOO 4234 General Parasitology (L*) [MMC]  
  Prerequisites (Grades of C or higher in): BSC 2010, Corequisite: ZOO4234L
- ZOO 4484 Primate Biology [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010, BSC2011

**C. PHYSIOLOGY/BIOCHEMISTRY**

**Summer 2020**
- BCH 3033 General Biochemistry (L*) [MMC]  
  Prerequisites (Grades of C or higher in): CHM2211, BSC2010
- CHM 4304 Biological Chemistry I (L*) [MMC]  
  Prerequisites (Grades of C or higher in): CHM2211, CHM2211L
- PCB 3702 Intermediate Human Physiology (L*) [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010 or BSC2011
- PCB 4717 Biotechnology: Applications in Industry, Agriculture and Medicine (L*) [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010 or BSC2011
- PCB 4717 Topics in Physiology/Biochemistry: Urban Vector Biology and Epidemiology and What it Means for Sub-Tropical Cities [MMC] -U01C  
  Prerequisites (Grades of C or higher in): BSC 2010+L and BSC 2011+L

**Fall 2020**
- BCH 3033 General Biochemistry (L*) [MMC]  
  Prerequisites (Grades of C or higher in): CHM2211, BSC2010
- CHM 4304 Biological Chemistry I (L*) [MMC]  
  Prerequisites (Grades of C or higher in): CHM2211, CHM2211L
- PCB 3702 Intermediate Human Physiology (L*) [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010 or BSC2011
- PCB 3703 Human Physiology I (L*) [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010
- PCB 4233 Immunology [BBC]  
  Prerequisites (Grades of C or higher in): PCB3063
- PCB 4334 Biotechnology: Applications in Industry, Agriculture and Medicine (L*) [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010, BSC2010L and BSC2011, BSC2011L
- PCB 4717 Topics in Physiology/Biochemistry: Urban Vector Biology and Epidemiology and What it Means for Sub-Tropical Cities [MMC] -U01C  
  Prerequisites (Grades of C or higher in): BSC2010, BSC2010L and BSC2011, BSC2011L
- PCB 4724 Comparative Physiology [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010, BSC2011, CHM2210
- PCB 4776 Physiological and Behavioral Ecology of Marine Animals [BBC]  
  Prerequisites (Grades of C or higher in): BSC2010, BSC2011, and PCB3043
- PCB 4805 Endocrinology [BBC]  
  Prerequisites (Grades of C or higher in): BSC1011, CHM2211, one physiology course
- ZOO 4733 Survey of Regional Anatomy [MMC]  
  Prerequisites (Grades of C or higher in): BSC2011, BSC2011L, CHM1046, CHM1046L, PHY2054

**D. STRUCTURE/DEVELOPMENT**

**Summer 2020**
- BSC 4401 Principles of Forensic Biology (L*) [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010, Lab: Prereq: PCB3063 and coreq: BSC4401
- BSC 4422 Biotechnology: Applications in Industry, Agriculture and Medicine (L*) [MMC]  
  Prerequisites (Grades of C or higher in): PCB 3063 or BCH 3033
- PCB 4253 Developmental Biology [MMC]  
  Prerequisites (Grades of C or higher in): PCB3063 and BSC 2010 or BSC 2023 or PCB 2099 or MCB 2000 or HSC 3549  
  Corequisite: ZOO3731L
- ZOO 3731 Human Anatomy (L*) [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010, CHM2210, CHM2211
- ZOO 3753 Histology (L*) [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010, CHM2210, CHM2211
- ZOO 4733 Survey of Regional Anatomy [MMC]  
  Prerequisites (Grades of C or higher in): BSC2011, BSC2011L, CHM1046, CHM1046L, PHY2054

**Fall 2020**
- BSC 4401 Principles of Forensic Biology (L*) [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010, Lab: Prereq: PCB3063 and coreq: BSC4401
- BSC 4422 Biotechnology: Applications in Industry, Agriculture and Medicine (L*) [MMC]  
  Prerequisites (Grades of C or higher in): PCB 3063 or BCH 3033
- PCB 4253 Developmental Biology [MMC]  
  Prerequisites (Grades of C or higher in): PCB3063 and BSC 2010 or BSC 2023 or PCB 2099 or MCB 2000 or HSC 3549  
  Corequisite: ZOO3731L
- ZOO 3731 Human Anatomy (L*) [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010, CHM2210, CHM2211
- ZOO 3753 Histology (L*) [MMC]  
  Prerequisites (Grades of C or higher in): BSC2010, CHM2210, CHM2211
- ZOO 4733 Survey of Regional Anatomy [MMC]  
  Prerequisites (Grades of C or higher in): 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 Flemt/Flex requirement – 2 years of high school foreign language satisfy Flemt/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: Beginning in the 2018-2019 school year and thereafter, all first-time-in-college baccalaureate seeking students entering a State University System institution must demonstrate civic literacy by satisfying the State of Florida’s, civic literacy requirement. Students at FIU can satisfy the civic literacy requirement by successful completion of any one of AMH2020 or POS2041, or by achievement of the standard score on one of the following assessments:

a. Advanced Placement (AP) — Government & Politics: United States (Min score of 3)
b. Advanced Placement (AP) — United States History (Min score of 4)
c. CLEP — American Government (Min. score of 50)
d. Florida Civic Literacy Test (CIV 2222) — (Min. score of 60). CIV 2222 will be proctored and administered through the University Testing Centers at MMC and BBC. This test will be offered to FIU students free of charge on specified dates each semester.

Students who choose to test outside of the designated dates may test on a walk-in basis. Sign up to take the CIV 2222 test at FIU. Students are strongly encouraged to fulfill this requirement before the end of their first year. No baccalaureate seeking student admitted during the 2018-2019 school year and thereafter, may graduate from FIU without first having met this requirement.

Minor in Biology
BSC 2010 and BSC 2011 with labs and three upper division elective courses and an upper division lab (3000-level or above) with one each being in any three of the following four areas: A. Ecology, B. Organismal Diversity, C. Physiology/Biochemistry, or D. Structure/Development.

<table>
<thead>
<tr>
<th>Course</th>
<th>Distribution Area (Applies to Minors Only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCB 3043 Ecology</td>
<td>Ecology (A)</td>
</tr>
<tr>
<td>PCB 4674 Evolution</td>
<td>Organismal Diversity (B)</td>
</tr>
<tr>
<td>PCB 4023 Cell Biology</td>
<td>Physiology/Biochemistry (C)</td>
</tr>
<tr>
<td>PCB 3063 Genetics</td>
<td>Structure/Development (D)</td>
</tr>
</tbody>
</table>

One of the three elective courses must be at the 4000-level or higher and one must include a lab. Total upper division biology credits must number 10 or more. Grades of “C” or better are required for all courses and the labs.

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 331A; 305-348-0515) 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 Approval.
Half time = 6-11 credits; Less than Half time = 5 credits or less.