

Instructions for Degree/Major Revisions:

- Complete this form when the proposed changes will impact the words, numbers, or symbols as presented in the current catalog copy (often referred to as “changing the footprint of the catalog”). **Changes to Program Admission Requirements and Additional Graduation Requirements** should also be included in this proposal.
- Catalog copy is available at <http://www.fgcu.edu/catalog/>. Scroll down to “Academic Programs” on the left navigation bar. Select Undergraduate Programs. Select the Program. Select “Print Program Details” in the upper right corner. Copy and paste catalog copy into a Word document. Turn on the tracking function (be sure that both additions and deletions appear in the tracking). Update the catalog year and make edits. Save the document as a Word file.
- When the proposed changes are approved by the College Curriculum Team, the College Administrator will send the following to Lucero Carvajal in Academic and Curriculum Support (ACS) no later than **May 31** for review by the University Undergraduate Curriculum Team (UUCT):
 - An electronic MS Word version of the **tracked** catalog via email.
 - A color hard copy of the Degree/Major Revision Proposal with appropriate signatures via campus mail.
 - An electronic MS Word version of a degree curriculum map showing prerequisites and sequencing for all courses via email.
- If changes are for courses only and there is no impact to the catalog copy, this revision form is not necessary. When these “**stand-alone**” courses have been approved by the College Curriculum Team and noted in CMS, the CMS College Administrator should send a list to Lucero Carvajal in ACS. The same May 31 deadline applies.
- All changes to courses are completed via the Curriculum Management System (CMS) <https://midas.fgcu.edu/acadaff/scns/default.asp>
- **Reminder:** The prefix/number for a new course is handled one way in the catalog copy and another in CMS. In the catalog copy, identify a new course with the suggested title, suggested prefix and course level, plus XXX (e.g, ART 4XXX). When final approval for the course prefix/number is received from Statewide Course Numbering System, the catalog copy will be updated. In CMS, a new course is requested by entering the suggested title and suggested prefix/number with no XXX. See instructions in CMS for selecting an appropriate suggested prefix/number.

1. Degree/Major Title:

B.S. Biotechnology

2. Contact person: Marilyn Cruz-Alvarez

College: Arts and Sciences

Department/School: Biological Sciences

Telephone: 590-7237

3. Briefly describe the proposed revision(s).

Change of a course PCB 4454 to a C designation.

4. Effective date: Fall 2020

Changes are effective in the fall of the year. Exceptions are approved only in unusual circumstances with adequate justification.

5. Briefly explain the rationale for the proposed revision.

Link the proposed revision to assessment and institutional effectiveness activities (feedback from students, market demands, program evaluation, resource allocation, etc.). Provide three years of data.

The C designation is requested for the PCB4454 Biological Statistics course because the course integrates a significant laboratory component, so that the class can work with student generated data from previously completed undergraduate research projects. Students engage in laboratory-based exercises that allow them to learn how to clean up real world data, manipulate data to address specific questions in biology, analyze the data in R objectively with the appropriate statistical procedures, create suitable graphical representation, and make appropriate interpretations based on observed patterns. The ability to provide these experiences is compromised if the course has to be taught in a non-lab format.

6. Describe additional library resources needed to support this revision? Explain rationale for response, even if answer is None.

No additional resources are needed.

7. Describe additional faculty resources needed to support this revision? Explain rationale for response, even if answer is None.

No additional resources are needed.

8. Describe additional technology, facility, laboratory, or other resources needed to support this revision? Explain rationale for response, even if answer is None.

No additional hardware is needed. However, students will need to have access to the statistical software program R, R Studio, and associated packages. R has quickly become the standard for data analytics, including biological statistics. As R changes on a continual basis with increasing number of developed and revised packages, students will need to be able to load new packages and R updates as needed. Students need access to the software on all campus computers to remain competitive. In addition, students from other Departments such as Mathematics also use these programs for their courses.

9. What impact will the proposed revision have on other colleges, units, or programs?

Please search current online catalog to determine if other colleges, units, or programs use courses that are part of this proposal and need to be notified of any changes.

There will be no impact on other programs.

10. New courses:

No new courses are required.

New courses are needed. List prefix/number/title below. Complete a Course Add Form for each from the Curriculum Management System - <https://midas.fgcu.edu/acadaff/scns/>.

11. Change to existing courses:

No existing courses are being changed.

Existing courses are being changed. List prefix/number/title below. Complete a Course Change Form for each from the Curriculum Management System - <https://midas.fgcu.edu/acadaff/scns/>.

PCB 4454 Biological Statistics.

12. Termination of existing courses:

No existing courses are being deleted from the FGCU course inventory.

Courses are being terminated. List prefix/number/title below. Complete a Course Terminate Form for each course from the Curriculum Management System - <https://midas.fgcu.edu/acadaff/scns/>.

13. What impact will the proposed revision have on the progression or sequencing of courses in this degree program?

Please provide evidence in the form of a degree curriculum map, a listing of all General Education, required and restricted elective courses in the major and their prerequisites or use another form appropriate for your program.

There will be no impact on the progression of courses.

14. What impact will the proposed revision have on the progression or sequencing of courses in this degree program for current students?

There will be no impact on current students because the change only affects an elective in the program and does not affect credit hours.

15. Catalog copy:

See Instructions above.

16. Additional remarks:

APPROVALS (required prior to submission)

Department/Program Chair/Director	<u>Clifford Reuk</u>	Date	<u>5-10-19</u>
College Curriculum Committee Chair	<u>Joseph N. Ponz</u>	Date	<u>5-10-19</u>
College Dean	<u>Chad [Signature]</u>	Date	<u>5/23/2019</u>

Does another department or unit provide related expertise or offer similar courses? No Yes (If yes, have the other department complete the following. Attach a separate sheet if needed.)

Department/Unit: _____
 Supports this proposal Does not support this proposal Defers Recommendation

Authorizing signature: _____ Date _____

Comments:



Biotechnology (B.S.)

College of Arts and Sciences

Department of Biological Sciences

<https://www.fgcu.edu/cas/departments/biosciences/biotech/>
(239) 590-7196

201920-202021 Catalog Year

The B.S. in Biotechnology provides students the opportunity to gain an understanding of living organisms, at the cellular and molecular level, and in relationship with their environment for the purpose of enhancing human health and improving the environment. The curriculum emphasizes hands-on learning and provides undergraduate research experience. Students learn through elective courses and research how to apply biological knowledge to solve current problems in fields such as Agriculture, Medicine, Environmental and Marine Sciences. The program prepares students pursuing graduate studies, entering the work force in industrial, academic or governmental laboratories, acceptance into medical, dental, veterinary or pharmacy schools.

Program Progression and Additional Graduation Requirements

For timely degree completion, students must complete all program milestones. The following actions occur when milestone are missed: first occurrence—advising hold and counseling regarding progression requirements; second occurrence—counseling and change to a major outside of the Department of Biology or Department of Chemistry and Physics that is more appropriate to student goals and academic performance. Appeals are handled through the relevant department. The decision of the appeal committee is final. Program milestones include the following:

- BSC 1010C or BSC 1011/1011L minimum grade of C completed one calendar year from admission as FTIC or 30 credits earned, whichever is earlier.
- BSC 1010C and BSC 1011/1011L minimum grade of C completed by end of fourth semester (including summers) from admission as FTIC or 45 credits earned, whichever is earlier.
- PCB 3023C, PCB 3043C or PCB 3063C minimum grade of C completed by end of sixth semester (including summers) from admission as FTIC or 60 credits earned, whichever is earlier.

Transfer students may declare the major after they have completed BSC 1010C, BSC 1011, and BSC 1011L with grades of C or better in each course. Transfer students must complete PCB 3023C, PCB 3043C or PCB 3063C with a grade of C or better within three semesters (including summer) of declaring the major.

- In addition to the program requirements, students must:
- Complete a minimum of 120 credits.
- Complete a minimum of 48 of the 120 credits at the upper division (3000 - 4999) level.
- Earn a cumulative GPA of 2.0 for all coursework attempted at FGCU.
- Satisfy the College-Level Skills and foreign language entrance requirements.
- Satisfy the Service Learning requirement. (See www.fgcu.edu/connect).
- Satisfy the residency requirement: thirty of the last sixty credits must be completed at FGCU.
- Complete the summer course enrollment requirement.
- Submit an Application for Graduation by the deadline listed in the FGCU Academic Calendar.

Program Requirements

1. FGCU General Education

Program (https://www2.fgcu.edu/general_education/)

To prevent or minimize excess hours, select general education courses that satisfy common prerequisite requirements for your intended major.

2. Common Prerequisites

For this major, common prerequisite courses with an asterisk (*) require prior knowledge and skills demonstrated through degree acceleration programs (e.g., the College Board's Advanced Placement Program [AP], International Baccalaureate Program [IB], College-Level Examination Program [CLEP], Advanced International Certificate of Education Program [AICE]); dual enrollment; placement exam; or college coursework.

FGCU Course: BSC 1010C Gen'l Biology w/Lab I (4) Minimum grade of C
Acceptable Substitute: BSCX010C

FGCU Course: BSC 1011 General Biology II (3) and BSC 1011L General Biology II Laboratory (1) Minimum grade of C
Acceptable Substitute: BSCX011C

FGCU Course: *CHM 1045 General Chemistry I (3) and CHM 1045L General Chemistry I Lab (1) Minimum grade of C
Acceptable Substitute: CHM045C

[Prerequisites of MAT 1033 minimum grade of C then MAC 1105 minimum grade of C; or relevant accelerated credit; or placement exam]

FGCU Course: CHM 1046 General Chemistry II (3) and CHM 1046L General Chemistry II Lab (1) Minimum grade of C

Acceptable Substitute: CHMX046C

FGCU Course: CHM 2210 Organic Chemistry I (3) and CHM 2210L Organic Chemistry I Laboratory (1) Minimum grade of C

Acceptable Substitute: CHMX210C

FGCU Course: CHM 2211 Organic Chemistry II (3) and CHM 2211L Organic Chemistry II Laboratory (1) Minimum grade of C

Acceptable Substitute: CHMX211C

FGCU Course: *MAC 2311 Calculus I (4) Minimum grade of C

Acceptable Substitute: MACX311 or MACX233 or MACX253 or MACX281

[Prerequisites of MAT 1033 minimum grade of C then MAC 1105 minimum grade of C then MAC 1147 minimum grade of C; or relevant accelerated credit; or placement exam]

FGCU Course: *PHY 2053C College Physics w/Lab I (4) Minimum grade of C

Acceptable Substitute: PHYX053C or (PHYX048 and PHYX048L)

[Prerequisites of MAT 1033 minimum grade of C then MAC 1105 minimum grade of C then MAC 1147 minimum grade of C; or relevant accelerated credit; or placement exam]

FGCU Course: PHY 2054C College Physics w/Lab II (4) Minimum grade of C

Acceptable Substitute: PHYX054C or (PHYX049 and PHYX049L)

FGCU Course: *STA 2023 Statistical Methods (3) Minimum grade of C

Acceptable Substitute: STAX023 or STAX122 or STAX014 or STAX024 or STAX321

[Prerequisites of MAT 1033 minimum grade of C; or relevant accelerated credit; or placement exam]

3. Required Courses in the Major (30 credits)

A minimum grade of C is required in each course.

BCH 3023C Biochemistry (3)

BSC 4422C Methods in Biotechnology (3)

BSC 4942C Senior Res. Biotech. (2)

BSC 4943 Sr. Proj. Pres. Biotech. (1)
IDS 3300 Foundations of CivicEngagement (3)
ISC 3120C Scientific Process (3)
MCB 3020C General Microbiology (4)
PCB 3023C Cell Biology (4)
PCB 3063C Genetics (4)
PCB 4522C Molecular Genetics (3)

4. Restricted Electives in the Major (18 credits)

A minimum grade of C is required in each course.

Select 2 credits from the following:

BSC 4905 Dir. Ind.Study/Res. Biotech. (1-3) or
BSC 4941 Internship in Biotechnology (1-3)

Select 16 credits from the following:

ANS 3440 Animal Nutrition (3)
BCH 3025C Analytical Biochemistry (3)
BOT 3015C The Lives of Plants and Algae (3)
BOT 4394C Plant Molecular Biology (3)
BOT 4503C Plant Physiology (3)
BSC 4905 Dir. Ind.Study/Res. Biotech. (1-3)
BSC 4930 Special Topics in Biology (2-4)
BSC 4941 Internship in Biotechnology (1-3)
MAC 2312 Calculus II (4)
MCB 3652C Environmental Microbiology (3)
MCB 4223C Food Microbiology (3)
MCB 4502C Virology (3)
PCB 3703C Human Physiology (4)*
PCB 3723C Comparative Animal Physiology (3)*
PCB 4233C Immunology (3)
PCB 4253C Developmental Biology (3)
PCB 4454C Biological Statistics (3)
PCB 4671C Evolution in the Omics Age (3)
PCB 4714 Comparative Immunology (3)
ZOO 4513C Animal Behavior (3)
ZOO 4753C Histology (3)

*Credits from only one course, either PCB 3723C Comparative Animal

Physiology or PCB 3703C Human Physiology will count towards the required hours of electives in Biotechnology.

5. University Requirements (3 credits)

IDS 3920 University Colloquium (3)

6. Additional Electives - as needed to reach total credits required for the degree

TOTAL CREDITS REQUIRED: 120