

(original)

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... 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.
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.
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.

1. Degree/Major Title:

Biochemistry BS

(note - current proposals for Chemistry BA, Chemistry BS, and Biochemistry BS are entirely identical)

2. Contact person: Daniel Paull

College: CAS

Department/School: Chemistry & Physics

Telephone: 239-745-4335

RECEIVED JUN 07 2019 BY: MKS

3. Briefly describe the proposed revision(s).

- Delete CHM 4931 Senior Capstone in Chemistry.
Change to CHM 4932 Chemistry Senior Seminar - a small change in the course description (and a senior level restriction for registration).
Catalog change - CHM 4230C Practical NMR Spectroscopy is changing from an in-major elective course to an in-major required course.

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.

Rationale for the changes:

We have found CHM 4931 ("Senior Capstone in Chemistry") to be an ineffective design, especially for large classes (over 10 students), and the feedback from the students over the last 3 years suggests that they would be far better served by taking another substantive course in its place. There is a lot of overlap between this course and CHM 4932 ("Senior Seminar"), so we are removing the redundancy. Additionally, CHM 4931 is a drain on the faculty as it requires 4 separate faculty co-teach it with non-commensurate contact hour assignments (not an issue with CHM 4932), removing CHM 4931 from the curriculum relieves a burden on our faculty. The department agrees and is comfortable with the transition, and we see no further use for CHM 4931. This requires 3 changes:

- (a) For future accreditation and continuity purposes, we want to keep the total credit hours of required in-major courses the same, so removing CHM 4931 (currently required in-major) requires moving a 3 credit hour course from elective in-major to required in-major. This will be CHM 4230C, see below.
- (b) We need another course to be our major's capstone. This will be CHM 4932, see below.
- (c) Deleting CHM 4931 because it will no longer be needed.

Rationale for making CHM 4230C ("Practical NMR Spectroscopy") required in-major instead of elective.

One of our best liked and most useful classes, according to student surveys and registration statistics, is CHM 4230C, so we are making it required to satisfy (a) above. This course has proven to be effective in preparing students for success in any of their post-FGCU endeavors, especially for graduate school and laboratory-based jobs.

Technically this gives us one fewer elective, but we are hiring 3 new faculty this year and will add new electives in the next cycle. Also, there will be no gap for students as having new faculty will allow us to offer more of the electives that are already offered intermittently.

Rationale for proposed changes to CHM 4932 ("Senior Seminar")

The only change is to the description of the course to indicate it is now our capstone experience for chemistry and biochemistry majors. (We will also place a senior-level registration requirement on this course.)

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

None. This proposal removes the need for resources.

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

None. The proposal removes burden on the faculty.

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

None. This proposal removes the need for resources.

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.

None for programs outside of Chemistry. In Chemistry, identical changes are proposed in our Chemistry BA, Chemistry BS, and Biochemistry BS programs (identical impacts) (documents are identical too).

10. New courses:

No new courses are required.

11. Change to existing courses:

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/>.

- CHM 4932 "Chemistry Senior Seminar"

12. Termination of existing courses:

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/>.

- CHM 4931 "Senior Capstone in Chemistry"

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.

- NONE. In the curriculum map, CHM 4230C is a *direct* replacement for the deleted course. No other changes were required.

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

Current students in this program will be migrated to the new course catalog. In no respects will this affect their progression or sequencing. If students had *planned* to take CHM 4931 in spring 2021, they will take CHM 4230C instead. This means that CHM 4230C will need to be carefully scheduled to avoid any conflict (as we previously did with CHM 4931, so it will be *no less available*).

If a student has already taken CHM 4230C as an elective, then this credit would change from *elective in-major* to *required in-major*. This can only make it easier to complete the graduation requirements.

We do not foresee any students who will have already taken CHM 4931 when the changes take effect because only students who are ready to graduate take that course.

15. Catalog copy:

See Instructions above.

16. Additional remarks:

Our faculty unanimously agree that this is a beneficial change to our program in all respects.

APPROVALS (required prior to submission)

Department/Program Chair/Director *Andriana Coltrane* Date *Feb 1st 2019*
 College Curriculum Committee Chair *Joseph V. Ross* Date *5-23-19*
 College Dean *CEL* *CEL* Date *5/23/2019*

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: _____



Biochemistry (B.S.)

College of Arts and Sciences

Department of Chemistry and Physics

<https://www2.fgcu.edu/CAS/BiochemistryBS/index.asp>

(239) 590-1878

201920-202021 Catalog Year

The B.S. in Biochemistry includes courses that integrate chemistry with the life sciences (e.g. advanced biochemistry, physical chemistry, and bio-inorganic courses) and prepares students for careers in biomedical, environmental, and defense areas; or, any fields that utilize baccalaureate level scientists. Graduates will be prepared for employment at government laboratories, grant-funded university research facilities, industrial laboratories, and pharmaceutical laboratories. Graduates will also be prepared for entry into biochemistry master's and doctoral programs. The biochemistry major provides a foundation for acceptance into professional programs and serves as a pre-professional track for medical, pharmacy, dentistry, veterinary, environmental and marine sciences programs.

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—warning and advising hold; second occurrence—advising hold and counseling regarding progression requirements; and third occurrence—counseling and change to a major outside of the Department of Chemistry and Physics or Department of Biology 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:

- CHM 1045/L (or CHM 1045C) minimum grade of C completed one calendar year from admission as FTIC or 30 credits earned, whichever is earlier.
- CHM 1046/L (or CHM 1046C) minimum grade of C completed by end of fifth semester (including summers) from admission as FTIC or 60 credits earned, whichever is earlier.
- CHM 2210/L (or CHM 2210C) minimum grade of C completed by end of seventh semester (including summers) from admission as FTIC or 75 credits earned, whichever is earlier.

- CHM 2211/L (or CHM 2211C) minimum grade of C completed by end of eighth semester (including summers) from admission as FTIC or 90 credits earned, whichever is earlier.
- CHM 3120/L (or CHM 3120C) minimum grade of C completed by end of eighth semester (including summers) from admission as FTIC or 90 credits earned, whichever is earlier.

Transfer students may declare the major after they have completed CHM 1045/L, CHM 1046/L, and CHM 2210/L with grades of C or better in each course. CHM 2211/L and CHM 3120/L must be completed 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 General Biology I w/lab (4) Minimum grade of C
Acceptable Substitute: (BSCX010 and BSCX010L) or BSCX010C or

(BSCX040 and BSCX040L) or BSCX040C

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

Acceptable Substitute: (BSCX011 and BSCX011L) or BSCX011C or (BSCX041 and BSCX041L)

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

Acceptable Substitute: (CHMX045 and CHMX045L) or CHMX045C or (CHMX040 and CHMX041)

[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: (CHMX046 and CHMX046L) or CHMX046C

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

Acceptable Substitute: (CHMX210 and CHMX210L) or (PHYX048 and PHYX048L) or (PHYX053 and PHYX053L)

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

Acceptable Substitute: (CHMX211 and CHMX211L) or (PHYX049 and PHYX049L) or (PHYX054 and PHYX054L)

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: MAC 2312 Calculus II (4) Minimum grade of C

Acceptable Substitute: MACX312

3. Required Courses in the Major (38 credits)

A minimum grade of C is required in each course.

BCH 4033C Advanced Biochemistry I (4)

BCH 4034C Advanced Biochemistry II (4)
CHM 3120 Analytical Chemistry (3)
CHM 3120L Analytical Chemistry Laboratory (1)
CHM 3410 Physical Chemistry I (3)
CHM 3410L Physical Chemistry I Lab (1)
CHM 3610 Inorganic Chemistry (3)
CHM 3610L Inorganic Chemistry Lab (1)
CHM 4130 Instrumental Analysis (3)
CHM 4130L Instrumental Analysis Lab (1)
~~CHM 4230C Practical NMR Spectroscopy (3)~~
~~CHM 4931 Senior Capstone in Chemistry (3)~~
CHM 4932 Chemistry Senior Seminar (3)
PHY 2048C General Physics w/lab I (4) or PHY 2053C College Physics I w/lab (4)
PHY 2049C General Physics w/lab II (4) or PHY 2054C College Physics II w/lab (4)

*If PHY 2048C and PHY 2049C or PHY 2053C and PHY 2054C were completed as common prerequisites, CHM 2210C and CHM 2211C must be taken to fulfill the required courses in the major; conversely, if CHM 2210C and CHM 2211C were taken to fulfill common prerequisites, PHY 2048C and PHY 2049C or PHY 2053C and PHY 2054C must be completed.

4. **Restricted Electives in the Major (19 credits)**

A minimum grade of C is required in each course.

Chemistry electives (13 credits)

BCH 3025C Analytical Biochemistry (3)
CHM 3411 Physical Chemistry II (3)
CHM 3411L Physical Chemistry II Lab (1)
CHM 3940 Internship in Chemistry (0-4)*
CHM 4080C Adv Environmental Chemistry (3)
CHM 4174C Lasers in Physical Sciences (3)
CHM 4220C Advanced Organic Chemistry (3)
~~CHM 4230C Practical NMR Spectroscopy (3)~~
CHM 4300 Bio-Organic Chemistry (3)
CHM 4431 Statistical Thermodynamics (3)
CHM 4512 Computational Modeling (3)
CHM 4671 Bioinorganic Chemistry (3)
CHM 4714C Materials Chemistry (3)
CHM 4905 Dir Ind Study/Res in Chem (2-4)*

CHM 4910C Senior Project in Chemistry (2)*
CHM 4912C Senior Thesis/Pres. Chemistry (2)*
CHM 4930 Special Topics in Chemistry (3)
CHS 4533C Forensic Biochemistry (3)
CHS 4544C Forensic Chemistry (3)
ISC 3120C Scientific Process (3)

*A maximum number of 4 credits combined from these courses can be used to fulfill the elective requirement.

Biology electives (6 credits)
BSC 4422C Methods in Biotechnology (3)
MCB 3020C General Microbiology (4)
PCB 3023C Cell Biology (4)
PCB 3063C Genetics (4)
PCB 4233C Immunology (3)
PCB 4522C Molecular Genetics (3)

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