

**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:**Chemistry BA**2. Contact person: Daniel PaullCollege: CASDepartment/School: Chemistry & PhysicsTelephone: 239-745-43353. Briefly describe the proposed revision(s).

- a. Reduce credit hours of Required In-Major Courses by 3 and increase credit hours of Restricted Electives In Major by 3 (making the overall in-major requirement stay the same:
  - a. Remove IDS 3300 Foundations of Civic Engagement from the required course list
  - b. Add 3 credit hours to restricted electives requirement (replaces IDS 3300)
- b. Add CHM 4254C [*suggested numbering*] Medicinal Organic Synthesis (new elective course)
- c. Change CHM 4905 Dir Ind Study/Res in Chem (2-4)\* to CHM 4905C Dir Ind Study/Res in Chem (1-4)\*
- d. Remove ISC 3120C Scientific Process from the restricted electives list

4. Effective date: Fall 2021

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.

- a. Reduce credit hours of Required In-Major Courses by 3 and increase credit hours of Restricted Electives In Major by 3 (making the overall in-major requirement stay the same:

a. Remove IDS 3300 Foundations of Civic Engagement from the required course list

and

b. Add 3 credit hours to restricted electives requirement (replaces IDS 3300)

The inclusion of this course in the major is an artifact of the early years of our major. Its removal follows a trend for other STEM majors in the College. This change allows our majors to take more electives in their chosen field. It can't slow them down because there's many replacements for a single course. The Chemistry BA is already low on credit requirements relative to the Department's other programs, and this change makes it possible to increase the core chemistry class requirement without increasing the overall hour requirement or causing any potential graduation delay. Lastly, this change will help us in our application for accreditation by keeping more students in courses where we can get good performance data.

- b. Add CHM 4xxC (*requested "CHM 4254C"*) Medicinal Organic Synthesis (new elective course).

There is a need for more elective courses in our department as a result of consistent increase in interest and participation in our programs. We currently have one organic elective, "CHM 4220C Advanced Organic Chemistry," which has been successful (18 students in the last offering, a large group for any chemistry elective course), and students have asked for another elective in the organic discipline, so we are splitting it into two courses. To accomplish the split, we are adding CHM 4254C and changing the description and student outcomes of CHM 4220C.

The former version of CHM 4220C tried to incorporate material from the two main organic elective categories ("synthesis" and "mechanism"), and this split will allow us to fill each course with the traditional content of these two distinct aspects of organic chemistry. Through the split, we will accomplish: (a) following the traditional content for each of these two main organic electives; (b) meet the demands of our growing number of majors; and (c) thinking forward, the course offerings will help us to develop a master's program in Medicinal & Pharmaceutical Chemistry.

- c. Change CHM 4905 Dir Ind Study/Res in Chem (2-4) to CHM 4905C Dir Ind Study/Res in Chem (1-4)\* We are 'changing' CHM 4905 to:

(1) add the 'C' label – this reflects the fact that the Directed Independent Research is a lab-based research opportunity for our students.

(2) Adding the asterisk (see item (d.) below

(3) Allowing the course to be taken for 1 credit.

- The 1-credit version will help our students graduate more easily by when they wind up with an odd number of credits from the electives, and by spreading out the research credits.

- d. Remove ISC 3120C Scientific Process from the restricted electives list

We are removing this course from the electives of the Department's other Majors, so this change makes them align better. Furthermore, chemistry faculty don't teach the course, so the course is less relevant to chemistry students than other science programs in the CAS. Lastly, this change will help us in our application for accreditation by keeping more students in courses where we can get good performance data.

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

None. Current resources are good for the new course, and other changes can have no effect here.

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

Nothing new; we currently have 4 faculty who are qualified and want to teach the new course. The other changes do not affect 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.

The new course ("CHM 4254C") will have a laboratory component. The Department currently has three undergraduate teaching labs that are all continuously booked, but the creation of this course aligns with the opening of the new Water School building (fall 2021), which will contain two new chemistry teaching labs, so we will have sufficient space for this new lecture/lab course.

The changes to CHM-4905C will not have an effect as faculty teach this in their own research labs with students who would be doing independent research anyway.

The removal of IDS 3300 from the program will slightly increase enrollment in our Department's elective course offerings.

Other changes can have no effect.

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.

In the Department, each program has proposed *almost* identical changes has its own proposal documentation. Outside of the Department, the only possible impact is on enrollment of IDS 3300 and ISC 3120C. However, our major is very small compared to other programs that use these courses, so this impact will be insignificant.

10. New courses:

no new courses are required.

- CHM 4254C [suggested numbering] Medicinal Organic Synthesis, a new elective

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 4905 "Dir Ind Study/Res in Chem" – add a "C" label and offer for 1–4 credits
- CHM 4220 "Advanced Organic Chemistry" – changes in the wording of the course description and student learning outcomes.

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/>.

- None

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.

- No significant impacts. The changes are a net zero change in credit requirements, and offering an additional elective course will help, as well as offering CHM 4905C for various credit options can help students with their sequencing.

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 unless they have taken ISC 3120C or IDS 3300 already in expectation of it counting toward degree requirements.

The change to 4905C and addition of a new elective course will allow students better sequencing opportunities.

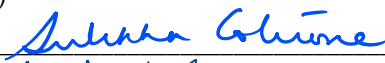
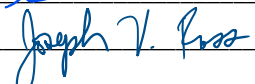
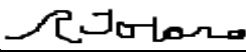
15. Catalog copy:

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  Date Feb 1<sup>st</sup> 2019  
 College Curriculum Committee Chair  Date 5-18-2020  
 College Dean  Date 5/28/20

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:

# Chemistry (B.A.)

College of Arts and Sciences

Department of Chemistry and Physics

<https://www.fgcu.edu/cas/departments/cphy/chemba/index.aspx>  
(239) 590-7196

~~2020-2021-2022~~ Catalog Year

The B.A. in Chemistry provides students with the opportunity to study matter, the physical material of the universe, and apply chemistry to enhance the quality of life. The program provides opportunities for undergraduate research and hands-on activities. Graduates will be prepared for professional study in medical, dental, veterinary, or pharmacy schools; graduate studies and employment as laboratory technicians in industry, academic or governmental laboratories.

## 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 <https://www.fgcu.edu/studentlife/servicelearning/>).
- 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.
- Satisfy Civic Literacy requirement.

## Program Requirements

### 1. FGCU General Education

**Program** (<https://www.fgcu.edu/academics/undergraduatestudies/generaleducation/>)

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

### 2. Common Prerequisites

A minimum grade of C is required in each course

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 Courses: \*CHM 1045 General Chemistry I (3) and CHM 1045L General Chemistry I Lab (1)

Acceptable Substitutes: (CHMX040 and CHMX041) or CHM045C or (CHMX045 and CHMX045L)

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

FGCU Courses: CHM 1046 General Chemistry II (3) and CHM 1046L General Chemistry II Lab (1)

Acceptable Substitutes: (CHMX046 and CHMX046L) or CHMX046C

FGCU Courses: \*MAC 2311 Calculus I (4) and MAC 2312 Calculus II (4)

Acceptable Substitute: (MACX311 and MACX312) or (MACX253 and MACX254)

[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 Courses: CHM 2210 Organic Chemistry I (3) and CHM 2210L Organic Chemistry I Laboratory (1) and CHM 2211 Organic Chemistry II (3) and CHM 2211L Organic Chemistry II Laboratory (1)

Acceptable Substitutes: (CHMX210 and CHMX210L and CHM X211 and CHM X211L) or (CHMX210C and CHMX211C)

FGCU Course: [PHY 2048 General Physics I (3) and PHY 2048L General Physics I Laboratory (1)] or [PHY 2053 College Physics I (3) and PHY 2053L College Physics I Laboratory (1)]

Acceptable Substitutes: PHYX048C or (PHYX048 and PHYX048L) or PHY X053C or (PHYX053 and PHYX053L)

FGCU Course: [PHY 2049 General Physics II (3) and PHY 2049L General Physics II Laboratory (1)] or [PHY 2054 College Physics II (3) and PHY 2054L College Physics II Laboratory (1)]

Acceptable Substitutes: PHYX049C or (PHYX049 and PHYX049L) or PHY X054C or (PHYX054 and PHYX054)

3. **Required Courses in the Major (~~28~~25 credits)**

A minimum grade of C is required in each course.

BCH 3023C Biochemistry (3)

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 Laboratory (1)

CHM 4130 Instrumental Analysis (3)

CHM 4130L Instrumental Analysis Laboratory (1)  
CHM 4230C Practical NMR Spectroscopy (3)  
CHM 4932 Chemistry Senior Seminar (3)  
~~IDS 3300 Foundations of Civic Engagement (3)~~

4. **Restricted Electives in the Major (minimum of 12-15 credits)**

A minimum grade of C is required in each course.

BCH 3025C Analytical Biochemistry (3)  
BCH 4033C Advanced Biochemistry I (4)  
BCH 4034C Advanced Biochemistry II (4)  
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 4xxxC (4254C) Medicinal Organic Synthesis (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 4905C Dir Ind Study/Res in Chem (21-4)\*  
CHM 4910C Senior Project in Chemistry (2)\*  
CHM 4912C Senior Thesis/Pres. Chemistry (2)\*  
CHM 4930 Special Topics in Chemistry (2-4)  
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.

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**





**BACHELOR OF ARTS IN CHEMISTRY\***

Fall - Year 3	Course	Course Description	Credits	Prerequisites	Offered
	CHM 3610/L	Inorganic Chemistry	4	CHM 1046/L	Fa
	BCH 3023C	Biochemistry	3	CHM 2211/L	Fa, Sp, Su
	XXX 3XXX/4XXX	Restricted Elective from Approved list	4	see catalog	
	XXX XXXX	Free Elective	3		
<b>Total Credits for Semester:</b>			<b>14</b>		

Spring - Year 3	Course	Course Description	Credits	Prerequisites	Offered
	CHM 4130/L	Instrumental Analysis	4	CHM 2211/L and CHM 3120/L	Sp
	BCH 3023C	Biochemistry	3	CHM 2211/L	Fa, Sp, Su
	XXX 3XXX/4XXX	Restricted Elective from Approved list	3	see catalog	
	IDS 3920	University Colloquium	3	see catalog	Fa, Sp, Su
XXX XXXX	Free General Elective	3			
<b>Total Credits for Semester:</b>			<b>16</b>		

Fall - Year 4	Course	Course Description	Credits	Prerequisites	Offered
	CHM 3410/L	Physical Chemistry I	4	CHM 2211/L, CHM 3120/L, PHY 2049/L	Fa
	CHM 4932	Senior Seminar in Chemistry	3	CHM 2211/L and CHM 3120/L MUST HAVE SENIOR STANDING TO REGISTER	Fa
	XXX 3XXX/4XXX	Restricted Elective from Approved list	3	see catalog	
	XXX XXXX	Free General Elective	3		
<b>Total Credits for Semester:</b>			<b>14</b>		

Spring - Year 4	Course	Course Description	Credits	Prerequisites	Offered
	CHM 4230C	Practical NMR Spectroscopy	3	CHM 2211/L	Sp
	XXX 3XXX/4XXX	Restricted Elective from Approved list	3	see catalog	
	XXX XXXX	Free General Elective	2		
	XXX XXXX	Free General Elective	3		
XXX XXXX	Free General Elective	3			
<b>Total Credits for Semester:</b>			<b>14</b>		

**Total Credits for Degree: 120**

**Course Type**

General Education
Common Prerequisites
Critical Course for the Major
Milestone Courses
Strongly Recommended Gen Ed
Required in the Major
Restricted Electives
University Requirement
General Electives

**Note:** FGCU requires that students who enter with fewer than 60 semester hours of credit must enroll in a minimum of 9 semester credit hours of coursework during one or more summer sessions prior to graduation. Therefore any of the courses listed in the fall and spring semesters above may be completed during a summer session. The total credits for the degree still add up to 120.

Summer	Course	Course Description	Credits	Prerequisites	Semester Offered
	XXX XXXX	Any Courses Listed Above	≥ 9	varies	Summer

## BACHELOR OF ARTS IN CHEMISTRY

Fall - Year 1	Course	Course Description	Credits	Prerequisites	Offered
	CHM 1045/L	General Chemistry I	4	various; see catalog	Fa, Sp, Su
	MAC2311	Calculus I*	4	MAC 1147, or other; see catalog	
	see catalog	State Core Gen Ed Requirement in Social Sciences	3		
	ENC 1101	Composition I	3	minimum test scores; see catalog	
<b>Total Credits for Semester:</b>			<b>14</b>		

Spring - Year 1	Course	Course Description	Credits	Prerequisites	Offered
	CHM 1046/L	General Chemistry II	4	CHM 1045/L	Fa, Sp, Su
	MAC 2312	Calculus II	4	MAC 2311	
	see catalog	State Core Gen Ed Requirement in Humanities	3		
	ENC 1102	Composition II	3	ENC 1101	
<b>Total Credits for Semester:</b>			<b>14</b>		

Summer	Course	Course Description	Credits	Prerequisites	Offered
	XXX XXXX	General Education in Social Sciences (GESO) course**	3		
	XXX XXXX	General Education in Humanities (GEHM) course**	3		
<b>Total Credits for Semester:</b>			<b>6</b>		

Fall - Year 2	Course	Course Description	Credits	Prerequisites	Offered
	CHM 2210/L	Organic Chemistry I	4	CHM 1046/L	Fa, Sp, Su
	CHM 3120/L	Analytical Chemistry	4	CHM 1046/L	Fa, Sp
	PHY 2048/L	General Physics w/Lab I	4	MAC 2311	Fa, Sp, Su
	XXX 3XXX/4XXX	Restricted Elective, Recommend CHM 4905C	2	see approved list in catalog	
<b>Total Credits for Semester:</b>			<b>14</b>		

Spring - Year 2	Course	Course Description	Credits	Prerequisites	Offered
	CHM 2211/L	Organic Chemistry II	4	CHM 2210/L	Fa, Sp, Su
	PHY 2049/L	General Physics w/Lab II	4	PHY 2048/L and MAC 2312	Fa, Sp, Su
	STA 2023	State Core Math: Statistical Methods*	3	MAT 1033 or other; see catalog	
	XXX-XXXX	General Education in Humanities (GEHM) course**	3		
<b>Total Credits for Semester:</b>			<b>14</b>		

**NOTES:**

\* Assumes student arrives ready for Calculus I (MAC 2311) and Statistical Methods (STA 2023)

\*\* University Competency Requirements: students must be careful to choose Gen Ed courses with the INKN attribute (6 hours)

For additional information, see: <http://www.fgcu.edu/CAS/ChemistryBA/7588.asp>