Florida Gulf Coast University ***UNDERGRADUATE Degree/Major Revision Proposal***

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 BS

2. *Contact person:* Daniel Paull

   College: CAS

   Department/School: Chemistry & Physics

   Telephone: 239-745-4335

3. *Briefly describe the proposed revision(s).*

   a. Add CHM 4254C [*suggested numbering*] – Medicinal Organic Synthesis (new elective course)
   b. Add CHM 4905C Dir Ind Study/Res in Chem (1-4)* to the restricted electives
   c. 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. Add CHM 4xxxC (*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.

   b. Add CHM 4905C Dir Ind Study/Res in Chem (1-4)* to the restricted electives
   We are adding the research course to the electives to encourage students to do more research with our faculty. As this is a BS degree, we believe this is justified.
   The asterisk limits the total electives between the Internship and Directed Independent Research courses to a maximum of 4 credit hours counted toward the elective requirement (where the internship alone was previously limited to 4 credit hours toward elective requirements).

   b. 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 addition of 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.

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 ISC 3120C. However, our students generally have not been taking this course, and our number of majors is small compared to the other programs that use the course, so this effect will be insignificant.

10. *New courses*:

- 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 negative impacts. The offering of CHM 4905C with various credit options can help students with their specific 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 with zero negative impact, unless they have taken ISC 3120C in expectation of it counting toward degree requirements.

Offering 4905C and 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)*

Florida Gulf Coast University ***UNDERGRADUATE Degree/Major Revision Proposal***

Department/Program Chair/Director _____ Date Feb 1st 2019

College Curriculum Committee Chair _____ Date 5-18-2020

College Dean Rebecca Stasio Date 5-19-20

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.S.)

College of Arts and Sciences
Department of Chemistry and Physics
https://www.fgcu.edu/CAS/ChemistryBS/index.asp
(239) 590-7196
~~2020~~ 2021-2022 Catalog Year

The B.S. in Chemistry is a rigorous program that provides students with the opportunity to study matter, the physical material of the universe, and apply knowledge acquired in high-level chemistry courses, laboratory experiences to enhance the quality of life. The program requires undergraduate research, hands-on activities, and the development of students' scientific writing skills. Graduates will be prepared for professional study in medical, dental, veterinary, or pharmacy schools; graduate studies in chemistry at the master's or doctoral level; and employment as chemists or physical scientists in industrial, academic or governmental industries.

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.
- PHY 2048/L (or PHY 2048C) 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, CHM 2210/L and PHY 2048/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.

   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)
Acceptable Substitutes: PHYX048C or (PHYX048 and PHYX048L)

FGCU Course: PHY 2049 General Physics II (3) and PHY 2049L General Physics II Laboratory (1)
Acceptable Substitutes: PHYX049C or (PHYX049 and PHYX049L)

3. **Required Courses in the Major (37 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 3411 Physical Chemistry II (3)
   CHM 3411L Physical Chemistry II 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 4910C Senior Project in Chemistry (2)

CHM 4912C Senior Thesis/Pres. Chemistry (2)
CHM 4932 Chemistry Senior Seminar (3)
MAC 2313 Calculus III (4)

4. **Restricted Electives in the Major (minimum of 12 credits)**
   A minimum grade of C is required in each course.
   BCH 3025C Analytical Biochemistry (3)
   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 (1-4)*
   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 this course 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

FLORIDA GULF COAST UNIVERSITY

Revised 1/2720

Chemistry & Physics Department **2021-2022 Academic Year**
College of Arts and Sciences

BACHELOR OF SCIENCE IN CHEMISTRY

	Course	Course Description	Credits	Prerequisites	Offered
Fall - Year 1	CHM 1045/L	General Chemistry I	4	various; see catalog	Fa, Sp, Su
	MAC 2311	Calculus I*	4	MAC 1147, or other; see catalog	
	see catalog	State Core course in Social Sciences	3		
	ENC 1101	Compostion I	3	minimum test scores; see catalog	
		Total Credits for Semester:	**14**		

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

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

	Course	Course Description	Credits	Prerequisites	Offered
Fall - Year 2	CHM2210/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 I	4	MAC 2311	Fa, Sp, Su
	STA 2023	State Core Math: Statistical Methods*	3	MAT 1033	
		Total Credits for Semester:	**15**		

	Course	Course Description	Credits	Prequisites	Offered
Spring - Year 2	CHM 2211/L	Organic Chemistry II	4	CHM 2210/L	Fa, Sp, Su
	PHY 2049/L	General Physics II	4	MAC 2312 and PHY 2048/L	Fa, Sp, Su
	MAC 2313	Calculus III	4	MAC 2312	
	XXX 3XXX/4XXX	Restricted Elective, Recommend CHM 4905C	2	see approved list in catalog	
		Total Credits for Semester:	**14**		

NOTES:

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

** *University Competancy 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/ChemistryBS/index.asp

FLORIDA GULF COAST UNIVERSITY

Revised 1/27/20

Department of Chemistry & Physics
College of Arts and Sciences

2021-2022 Academic Year

BACHELOR OF SCIENCE IN CHEMISTRY

	Course	Course Description	Credits	Prerequisites	Offered
Fall - Year 3	CHM 3410/L	Physical Chemistry I	4	CHM 2211/L, CHM 3120/L, PHY 2049/L	Fa
	CHM 3610/L	Inorganic Chemistry	4	CHM 1046/L	Fa
	XXX XXXX	Free Elective	3		
	XXX XXXX	General Education in Humanities (GEHM) course**	3		
		Total Credits for Semester:	**14**		

	Course	Course Description	Credits	Prerequisites	Offered
Spring - Year 3	BCH 3023C	Biochemistry	3	CHM 2211/L	Fa, Sp, Su
	CHM 3411/L	Physical Chemistry II	4	CHM 3410/L	Sp
	XXX 3XXX/4XXX	Restricted Elective from Approved list	4	see catalog	
	XXX XXXX	Free Elective	3		
		Total Credits for Semester:	**14**		

	Course	Course Description	Credits	Prerequisites	Offered
Fall - Year 4	CHM 4910C	Senior Project in Chemistry	2	CHM 2211/L and CHM 3120/L	Fa
	CHM 4932	Chemistry Senior Seminar	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	
	IDS 3920	University Colloquium	3	see catalog	Fa, Sp, Su
	XXX XXXX	Free General Elective	3		
		Total Credits for Semester:	**14**		

	Course	Course Description	Credits	Prerequisites	Offered
Spring - Year 4	CHM 4912C	Senior Thesis/Pres. Chemistry	2	CHM 4910C	Sp
	CHM 4230C	Practical NMR Spectroscopy	3	CHM 2211/L	Sp
	CHM 4130/L	Instrumental Analysis	4	CHM 2211/L and CHM 3120/L	Sp
	XXX 3XXX/4XXX	Restricted Elective from Approved list	3	see catalog	
	XXX XXXX	Free Elective	3		
		Total Credits for Semester:	**15**		

Total Credits for Degree: **120**

Course Type

Required General Education / Core
Common Prerequisites
Required in the Major
Critical Course for the Major
Milestones for the Major
Restricted Electives
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.*

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