BIOCHEMISTRY (B.S.)

The Bachelor of Science (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 General Chemistry I and CHM 1045L General Chemistry I Laboratory (or CHM 1045C) minimum grade of C completed one calendar year from admission as first time in college (FTIC) or 30 credits earned, whichever is earlier.
- CHM 1046 General Chemistry II and CHM 1046L General Chemistry II Lab (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 Organic Chemistry I and CHM 2210L Organic Chemistry I Laboratory (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 Organic Chemistry II and CHM 2211L Organic Chemistry II Laborator (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 Analytical Chemistry and CHM 3120L Analytical Chemistry Lab (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 General Chemistry I, CHM 1046 General Chemistry II, and CHM 2210 Organic Chemistry I with grades of C or better in each course. CHM 2211 Organic Chemistry II and CHM 3120 Analytical Chemistry 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.
- Satisfy the Civic Literacy requirement.
- Satisfy the residency requirement: 30 of the last 60 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

Code	Title	Credits
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.		
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.		
A minimum grade of C is required in each course		
BSC 1010C	General Biology with Lab I (Acceptable Substitute: (BSCX010 and BSCX010L) or BSCX010C or BSCX040C)	4
BSC 1011 & 1011L	General Biology II and General Biology II Laboratory (Acceptable Substitute: (BSCX011 and BSCX011L) or BSCX011C or BSCX041C)	4
CHM 1045 & 1045L	General Chemistry I and General Chemistry I Laboratory (Acceptable Substitute: (CHMX045 and CHMX045L) or CHMX045C or (CHMX040 and CHMX041)) [*, 1]	4
CHM 1046 & 1046L	General Chemistry II and General Chemistry II Lab (Acceptable Substitute: (CHMX210 and CHMX210L) or (PHYX048 and PHYX048L) or (PHYX053 and PHYX053L))	4
CHM 2210 & 2210L	Organic Chemistry I and Organic Chemistry I Laboratory (Acceptable Substitute: (CHMX210 and CHMX210L) or (PHYX048 and PHYX048L) or (PHYX053 and PHYX053L))	4
CHM 2211 & 2211L	Organic Chemistry II and Organic Chemistry II Laborator (Acceptable Substitute: (CHMX210 and CHMX210L) or (PHYX048 and PHYX048L) or (PHYX053 and PHYX053L))	4
MAC 2311	Calculus I (Acceptable Substitute: MACX311 or MACX233 or MACX253 or MACX281) [*, 2]	4
MAC 2312	Calculus II (Acceptable Substitute: MACX312)	4

Required Courses in the Major		**(38 credits)**
A minimum grade of C is required in each course		
BCH 4033	Advanced Biochemistry I	3
BCH 4033L	Advanced Biochemistry I Lab	1
BCH 4034	Advanced Biochemistry II	3
BCH 4034L	Advanced Biochemistry II Lab	1
CHM 3120	Analytical Chemistry	3
CHM 3120L	Analytical Chemistry Lab	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 Lab	1
CHM 4230C	Practical NMR Spectroscopy	3
CHM 4932	Chemistry Senior Seminar	3
PHY 2048 & 2048L	General Physics I and General Physics I Laboratory [3]	4
PHY 2049 & 2049L	General Physics II and General Physics II Laboratory [4]	4
Restricted Electives in the Major		**(19 credits)**
A minimum grade of C is required in each course		
Chemistry Electives		(13 credits)
Select 13 credits from the following:		
BCH 3025C	Analytical Biochemistry	3
CHM 3411	Physical Chemistry II	3
CHM 3411L	Physical Chemistry II Lab	1
CHM 3940	Internship in Chemistry [5]	4
CHM 4080C	Adv Environmental Chemistry	3
CHM 4174C	Lasers in Physical Sciences	3
CHM 4220C	Advanced Organic Chemistry	3
CHM 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 [5]	1-4
CHM 4910C	Senior Project in Chemistry [5]	2
CHM 4912C	Senior Thesis/Pres. Chemistry [5]	2
CHM 4930	Special Topics in Chemistry	2-4
CHS 4533C	Forensic Biochemistry	3
CHS 4544C	Forensic Chemistry	3
Biology Electives		(6 credits)
Select six credits from the following:		
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
Sustainability Course Graduation Requirement		**(3 credits)**
Select at least 3 credits in sustainability coursework (SCGR Attribute)		
Additional Electives		
As needed to reach total credits required for the degree		

1 Prerequisites of MAT 1033 Intermediate Algebra minimum grade of C then MAC 1105 College Algebra minimum grade of C; or relevant accelerated credit; or placement exam.

2 Prerequisites of MAT 1033 Intermediate Algebra minimum grade of C then MAC 1105 College Algebra minimum grade of C then MAC 1147 Precalculus minimum grade of C; or relevant accelerated credit; or placement exam.

3 Or PHY 2053 College Physics I College Physics I (3) and PHY 2053L College Physics I Laboratory College Physics I Laboratory (1). If PHY 2048 General Physics I or PHY 2053 College Physics I were completed as common prerequisites, then CHM 2210 Organic Chemistry I must be taken to fulfill the required courses in the major.

4 Or PHY 2054 College Physics II College Physics II (3) and PHY 2054L College Physics II Laboratory College Physics II Laboratory (1). If PHY 2049 General Physics II or PHY 2054 College Physics II were completed as common prerequisites, then CHM 2211 Organic Chemistry II must be taken to fulfill the required courses in the major.

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

Total Credits Required: 120