

BIOCHEMISTRY, B.S.

Undergraduates apply to NJCU with a Priority Deadline for Freshman and Transfer Students:

Fall Semester Start: April 15

Spring Semester Start: December 1

Candidates must apply for and be accepted into the University. There are no requirements for admission to this degree track, but students are encouraged to begin taking MATH 192 and MATH 193 Calculus and Analytical Geometry I and II (Prerequisite MATH 175 Enhanced Precalculus), PHYS 140 and PHYS 141 Principles of Physics I and II (Prerequisite PHYS 100, Preparation for Physics), CHEM 105 and CHEM 106 General Chemistry I & II (Prerequisite CHEM 100 Preparation for General Chemistry), and BIOL 130 and BIOL 131 Principles of Biology I and II as early as possible in their academic careers.

Program Curriculum

The program of study is rigorous and designed for sequential learning. It consists of 41 credits (minimum) in general education courses, followed by seven required courses in Physics and Mathematics for 17 credits (up to 9 credits may be counted toward General Education Tier II Quantitative Literacy Mode of Inquiry), nineteen interdisciplinary major courses between Chemistry and Biology for 55 credits, and two to five elective courses (7-16 credits) for a total of 120 credits including:

General Education (total 41 credits)

Code	Title	Credits
ENGL 101	Critical Writing and Analysis	4
ENGL 102	Critical Writing and Research	4
4 Tier I Seminars		12
6 Tier II Seminars ¹		18
Tier III Capstone Course		3
Total Credits		41

¹ Up to 9 credits of Tier II Seminars in Quantitative Literacy Mode of Inquiry may come from Math and Physics requirements.

Pre-requisite courses

Code	Title	Credits
MATH 175	Enhanced Precalculus	4
CHEM 100	Preparation for General Chemistry	3
PHYS 100	Preparation for Physics	3

Required courses (total 72 credits)

Mathematics and Physics (17 credits)

Code	Title	Credits
MATH 140	Statistics I	3
MATH 192	Calculus and Analytic Geometry I	4
MATH 193	Calculus and Analytic Geometry II	4
PHYS 140	Principles of Physics I - Lecture	3
PHYS 1140	Principles of Physics I - Laboratory and recitation	1

PHYS 141	Principles of Physics II - Lecture	3
PHYS 1141	Principles of Physics II - Laboratory and Recitation	1

Total Credits **19**

¹ Counts towards General Education Quantitative Literacy Mode of Inquiry (Tier II Seminars) for up to 9 credits total.

Chemistry and Biology

Code	Title	Credits
CHEM 105	General Chemistry I Lecture	3
CHEM 1105	General Chemistry I Recitation/Laboratory	2
CHEM 106	General Chemistry II Lecture	3
CHEM 1106	General Chemistry II Recitation/Laboratory	2
CHEM 205	Analytical Chemistry Lec	3
or CHEM 316	Instrumental Analysis, Lecture	
CHEM 2205	Analytical Chemistry Laboratory	2
or CHEM 3316	Instrumental Methods of Analysis, Laboratory	
CHEM 207	Organic Chemistry I	3
CHEM 2207	Organic Chemistry I Laboratory	1
CHEM 208	Organic Chemistry II	3
CHEM 2208	Organic Chemistry II Laboratory	1
CHEM 305	Physical Chemistry I	3
CHEM 307	Biochemistry I	4
CHEM 308	Biochemistry II	3
CHEM 405	Seminar	1
BIOL 130	Principles Biology I	4
BIOL 131	Principles Biology II	4
BIOL 230	Cell Biology	4
BIOL 303	Microbiology	4
BIOL 304	Genetics	4
Total Credits		54

Required elective courses: select from the following courses (total of 7 credits)

Code	Title	Credits
CHEM 220	Environmental Chemistry	4
CHEM 316	Instrumental Analysis, Lecture	3
CHEM 3316	Instrumental Methods of Analysis, Laboratory	2
CHEM 401	Medicinal Chemistry	3
CHEM 420	Food Chemistry	4
CHEM 492	Chemical Research ²	2-3
or CHEM 493	Chemical Research	
or BIOL 350	Biology Research	
or BIOL 450	Biology Research	
BIOL 252	Evolution: A Biological and Geological Approach	3
BIOL 301	General Physiology	4
BIOL 404	Immunology	3
BIOL 406	Molecular Genetics	4

² Only one research course (CHEM 492/493, BIOL 350/450) may be counted toward major required elective.

The B.S. in Biochemistry program will focus on the development of durable, translatable skills and strong fundamental knowledge. The program enables students to develop life-long learning capability with a vigorous grounding in its core concepts nurtured through a continual, progressive emphasis on critical reasoning skills, experiential learning, and the ability to communicate information and concepts in a clear, accurate, and organized form using both the written and spoken word.

The B.S. in Biochemistry consists of foundation courses in chemistry, biology, physics, and mathematics with core courses in biochemistry focusing on the molecular and cellular understanding of biological processes in terms of energy, structure and function, information storage and processing, in the context of the pervasive role of evolution and homeostasis.