BIOCHEMISTRY MAJOR

Are you curious about how life works at a molecular level? ***Biochemistry*** bridges biology and chemistry to explore the chemical processes that sustain life, from how we extract energy from food to how genetic information is stored and expressed. As a laboratory-based and interdisciplinary science, biochemistry prepares students for a wide range of careers—including medicine, biotechnology, pharmacology, and research—by providing a deep understanding of the molecular mechanisms behind health, disease, and biological function. Whether you're interested in pre-health professions or the fast-growing biotech industry, biochemistry offers a strong foundation and diverse career pathways.

Major Requirements

The requirements for a **major in biochemistry** are 62 credits:

Code	Title	Hours
Required Courses		
CHEM 127	General Chemistry I	4
CHEM 128	General Chemistry II	4
CHEM 330	Analytical Chemistry I	4
CHEM 341	Organic Chemistry I	4
CHEM 342	Organic Chemistry II	4
CHEM 373	Biochemistry I	4
CHEM 374	Biochemistry II	4
CHEM 403	Senior Seminar I	1
CHEM 404	Senior Seminar II	1
BIOL 121	Cell Biology	4
BIOL 122	Evolution and Diversity	4
BIOL 222	Genetics and Molecular Biology	4
Electives		**8**
BIOL/CHEM 3xx or 4xx [1]		
Supporting Courses (required)		**12**
MATH 121	Calculus I	
or MATH 205	Introduction to Statistics	
or DATA 200	Introduction to Data Analytics	
or CSC 125	Introduction to Computer Science	
PHYS 111	General College Physics I	
or PHYS 128	Physics for Scientists and Engineers	
PHYS 112	General College Physics II	
or PHYS 211	Physics for Scientists and Engineers II	
Total Hours		**62**

[1] No more than the equivalent of 4 credits of BIOL/CHEM 487 may be applied toward the major. The following cannot be counted toward a major: BIOL/CHEM 390 Academic Internship, BIOL/CHEM 480 Independent Study, BIOL 303 Biomedical Ethics, BIOL 395 Internship in Medicine. Students cannot major in both Chemistry and Biochemistry, nor can they major in Biochemistry and minor in Chemistry. However, majoring in Biochemistry and minoring or majoring in Biology is allowed.

Degree and Graduation Requirements

In addition to the program-specific requirements listed above, all students must complete the graduation requirements specified for their degree. See the Degree and Graduation Requirements (https://catalog.concordiacollege.edu/undergraduate-academic-community/degree-graduation-requirements/) section for more information.

Suggested Four Year-Plan

The four-year plan detailed below is a suggested coursework sequence. This plan may need to be adapted based on course offerings as well as individual student circumstances, such as transfer credit and study away experiences.

Biochemistry Major

Course	Title	Hours
First Year		
Fall		
CHEM 127	General Chemistry I	4
BIOL 121	Cell Biology	4
FYS 110	Engaged Citizenship Seminar	4
ENG 110 or COM 110	Writing to Engage or Communicating to Engage	4
WELL 110	Engaging in Lifelong Wellness	1
	Hours	**17**
Spring		
CHEM 128	General Chemistry II	4
BIOL 122	Evolution and Diversity	4
Core Exploration Course		4
COM 110 or ENG 110	Communicating to Engage or Writing to Engage	4
WELL 111	Engaging in a Balanced Life	1
	Hours	**17**
Second Year		
Fall		
CHEM 341	Organic Chemistry I	4
REL 200	Christianity and Religious Diversity	4
World Language I		4
MATH 121 or DATA 200 or CSC 125	Calculus I or Introduction to Data Analytics or Introduction to Computer Science	4
	Hours	**16**
Spring		
CHEM 342	Organic Chemistry II	4
BIOL 222	Genetics and Molecular Biology	4
World Language II		4
Core Exploration Course		4
	Hours	**16**
Third Year		
Fall		
CHEM 373	Biochemistry I	4
PHYS 111	General College Physics I	4
Core Exploration Course		4
Chemistry/Biology Elective [1]		4
	Hours	**16**
Spring		
CHEM 374	Biochemistry II	4
PHYS 112	General College Physics II	4
Core Exploration Course		4
Chemistry/Biology Elective [1]		4
	Hours	**16**
Fourth Year		
Fall		
CHEM 403	Senior Seminar I	1

Religion 300 J Core Course		4
Critical Issues Course or Elective		4
Elective		4
Elective		4
	Hours	**17**
Spring		
CHEM 330	Analytical Chemistry I	4
CHEM 404	Senior Seminar II	1
Critical Issues Course or Elective		4
Elective		4
Elective		4
	Hours	**17**
	Total Hours	**132**

[1] The following upper-level Biology courses are strong recommended:

- BIOL 416 Advanced Genetics
- BIOL 407 Microbiology
- BIOL 380 Plant Physiology and Development
- BIOL 352 Immunology and Parasitology
- BIOL 406 Advanced Cell Biology
- BIOL 409 Limnology

Electives should *not* be two courses in sequence (eg Anatomy & Physiology I and II, Physical Chemistry I and II, etc.)

[2] All students must complete two PEAK experiences.

Biochemistry Major (needing CHEM 117)

Course	Title	Hours
First Year		
Fall		
CHEM 117	Principles of Chemistry	4
BIOL 121	Cell Biology	4
FYS 110	Engaged Citizenship Seminar	4
ENG 110 or COM 110	Writing to Engage or Communicating to Engage	4
WELL 110	Engaging in Lifelong Wellness	1
	Hours	**17**
Spring		
CHEM 127	General Chemistry I	4
BIOL 122	Evolution and Diversity	4
COM 110 or ENG 110	Communicating to Engage or Writing to Engage	4
Core Exploration Course		4
WELL 111	Engaging in a Balanced Life	1
	Hours	**17**
Second Year		
Fall		
CHEM 128	General Chemistry II	4
REL 200	Christianity and Religious Diversity	4
PHYS 111	General College Physics I	4
World Language I		4
	Hours	**16**
Spring		
CHEM 330	Analytical Chemistry I	4
BIOL 222	Genetics and Molecular Biology	4
PHYS 112	General College Physics II	4
World Language II		4
	Hours	**16**
Third Year		
Fall		
CHEM 341	Organic Chemistry I	4
MATH 121 or DATA 200 or CSC 125	Calculus I or Introduction to Data Analytics or Introduction to Computer Science	4
Elective		4
Elective		4
	Hours	**16**
Spring		
CHEM 342	Organic Chemistry II	4
Core Exploration Course		4
Core Perspectives Course		4
Elective		4
	Hours	**16**
Fourth Year		
Fall		
CHEM 373	Biochemistry I	4
CHEM 403	Senior Seminar I	1
Religion 300 J Core Course		4
Core Exploration Course		4
Chemistry/Biology Elective [1]		4
	Hours	**17**
Spring		
CHEM 374	Biochemistry II	4
CHEM 404	Senior Seminar II	1
Core Perspectives Course		4
Core Exploration Course		4
Chemistry/Biology Elective [1]		4
	Hours	**17**
	Total Hours	**132**

[1] The following upper-level Biology courses are strong recommended:

- BIOL 416 Advanced Genetics
- BIOL 407 Microbiology
- BIOL 380 Plant Physiology and Development
- BIOL 352 Immunology and Parasitology
- BIOL 406 Advanced Cell Biology
- BIOL 409 Limnology

Electives should *not* be two courses in sequence (eg Anatomy & Physiology I and II, Physical Chemistry I and II, etc.)

[2] All students must complete two PEAK experiences.