



BIOCHEMISTRY

What YOU will learn:

As a major in biochemistry, you will study the molecules that make up life! Biochemistry explores the study of chemical reactions within a living cell – with applications ranging from pharmaceuticals to biofuels.

Biochemistry includes preparation in chemistry, biology, physics and calculus. You will learn to develop new ideas, problem solve, conduct research, analyze and evaluate data. Beyond the core requirements, you will have the opportunity to enroll in elective courses including Research Techniques in Biochemistry, Plant Biochemistry, Computational Biology, or Advanced Topics in Biophysical Chemistry.

Career opportunities YOU will have:

Job growth in biochemistry is expected to increase 37% between 2008 and 2018 (Bureau of Labor and Statistics), primarily due to increased demand in medical technology and climate change (biofuels/plant biotechnology). Career opportunities with the bachelor of science degree include entry-level positions as research technologists in biomedical, pharmaceutical, and agricultural labs. You can combine communication skills with a science background to work in education, business, or government agencies.

The majority of our students pursue advanced degrees – including health professions, secondary education, and the molecular life sciences. These professionals have a profound effect on our society as physicians, dentists, public policy makers, teachers, and researchers. Employment of recent Nebraska graduates in biochemistry include:

- Associate Analyst, Celerion Labs
- Burn Tech, St. Elizabeth Regional Health Center
- Chemist, Archer Daniels Midland
- Histotech, Pathology Medical Services
- Laboratory Technician, POET Research Center, Inc
- Missionary, Hong Kong Adventist College
- Phlebotomist, BryanLGH
- Plant Research Biologist, Midwest Research Inc
- Research Technician II - Bio Process Development Facility, UNL

Why NEBRASKA for Biochemistry?

Our faculty use a teaching style that emphasizes core concepts and actively incorporates teamwork, problem solving, and project management skills into our lecture and lab courses. This means that our lecture courses involve active participation and allow for greater long-term retention of material.

We also focus on providing research experiences both inside and outside the classroom. In addition to on-campus experiences in faculty labs, we offer three lab based courses that provide hands-on exposure to highly technical instrumentation and the opportunity to work on novel DNA sequences. Internships with local biomedical and agricultural companies are also available.

Picture yourself engaging in research similar to these current student projects in our Undergraduate Creative Activities and Research Experience (UCARE) Program: *Ligand-binding Characterization of Non-human Liver Scavenger Receptors*, *Reaction Kinetics of the Enzyme Proline Utilization A in Sinorhizobium meliloti*, *Characterization of Stabilin-2 in animal models*, and *Functional characterization of human Hyal3*.

Get involved and connect with the department and your peers by joining the Biochemistry Club where you will hear talks from biochemists in a variety of fields, discuss research and other topics, tour facilities and labs, and learn more about the different career paths within Biochemistry.



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	COURSE NAME	HOURS
FIRST Semester	BIOC 101: Career Opportunities in Biochemistry	1
	CHEM 109: General Chemistry I (ACE 4)	4
	MATH 106: Calculus I (ACE 3)	5
	ACE 1: Written texts/research & knowledge skills	3
	Language Requirement - 201 Level (CDR E)	3
	Total Hours	16

	COURSE NAME	HOURS
SECOND Semester	CHEM 110: General Chemistry II	4
	MATH 107: Calculus II (CDR F)	4
	LIFE 120: Fundamentals of Biology I (CDR B)	3
	LIFE 120L: Fundamentals of Biology Lab (CDR BL)	1
	Language Requirement - 202 Level (CDR E)	3
	Total Hours	15

THIRD Semester	CHEM 251: Organic Chemistry I	3
	CHEM 253: Organic Chemistry I Lab	1
	LIFE 121: Fundamentals of Biology II	3
	LIFE 121L: Fundamentals of Biology II Lab	1
	ACE 6: Social Sciences	3
	College Distribution Requirement (CDR) A: Written Communication	3
	Total Hours	14

FOURTH Semester	CHEM 252: Organic Chemistry II	3	
	CHEM 254: Organic Chemistry II Lab	1	
	BIOS 206: General Genetics	4	
	ACE 2: Communication skills	3	
	CDR D: Social Sciences	3	
		Total Hours	14

FIFTH Semester	BIOC 431: Structure & Metabolism	3
	PHYS 141: Elementary General Physics I	5
	ACE 5: Humanities	3
	Elective/Minor/Secondary Major/Pre-Professional	3
	Elective/Minor/Secondary Major/Pre-Professional	1
	Total Hours	15

SIXTH Semester	BIOC 432: Metabolism and Biological Information	3
	BIOS 312: Microbiology	3
	BIOS 314: Microbiology Lab	1
	PHYS 142: Elementary General Physics II	5
	ACE 9: Global awareness & human diversity	3
	Total Hours	15

SEVENTH Semester	CHEM 221: Elementary Quantitative Analysis	4
	BIOC 433: Biochemistry Laboratory	2
	ACE 8: Ethics/Civics/Stewardship	3
	CDR C: Humanities	3
	Elective/Minor/Secondary Major/Pre-Professional	3
	Total Hours	15

EIGHTH Semester	BIOC 435: Advanced Topics in Biochemistry (ACE 10)	3
	CHEM 471: Physical Chemistry	4
	ACE 7: Fine Arts	3
	Elective/Minor/Secondary Major/Pre-Professional	3
	Elective/Minor/Secondary Major/Pre-Professional	3
	Total Hours	16

DISCLAIMER: This document represents a sample 4-year plan for degree completion with a major of interest in the College of Arts and Sciences. Actual course selection and sequence may vary and should be discussed individually with an Academic Advisor at the college and department level.