



## BIOCHEMISTRY

### Academics

When you major in biochemistry, you will study the molecules that make up life! Biochemistry explores chemical reactions within a living cell with applications ranging from pharmaceuticals to biofuels. As one only four Big Ten universities accredited by the American Society for Biochemistry and Molecular Biology, seniors who pass the accreditation exam are recognized by the professional society as earning a certified degree. Our faculty emphasize core concepts as well as teamwork, problem solving and project management.

Requirements for the major include coursework in chemistry, biology, physics and calculus. Beyond that, dive deep into areas that match your interests and goals—that could include computers, business, psychology, or even art.

### Opportunities

Career opportunities with the bachelor of science degree include entry-level positions as a research technologist 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. Here are examples of recent graduates' employment:

- Application Scientist / *ADVANCED ANALYTICAL TECHNOLOGIES*
- Chemical Engineer I / *BLACK & VEATCH*
- Forensic Scientist / *LINCOLN POLICE DEPARTMENT*
- Lab Technician / *NEOGEN CORPORATION*
- Manufacturing Development Chemist / *ASH GROVE CEMENT CO.*
- Neuromonitoring Technologist / *BIOTRONIC NEURONETWORK*
- Plant Research Biologist / *MIDWEST RESEARCH INC.*
- Researcher / *UNIVERSITY OF NEBRASKA MEDICAL CENTER*
- Science Writer / *LI-COR BIOSCIENCES*
- Scientist / *THE ESTÉE LAUDER COMPANIES INC.*

### Experience

In the College of Arts and Sciences, we know experience is valuable and goes beyond the classroom. We strive to help you connect your academics with research, internships, education abroad, service learning and leadership experiences.

Take advantage of opportunities in biochemistry such as:

- Researching alongside faculty in our Redox Biology Center or Center for Plant Science Innovation
- Becoming an Associate Management Intern at Cargill
- Studying abroad in Peru with Nebraska's affiliated GREEN Program for Water Resource Management and Sustainable Practices
- Hold leadership positions in campus organizations like Biochemistry Club, AMSA, or MedLife
- Intern with a cutting-edge biotech company like EnviroLogix



We are one of only four Big Ten universities accredited by the American Society for Biochemistry and Molecular Biology (ASBMB).

Seniors who pass the ASBMB Accreditation exam are recognized by the professional society as earning a certified degree!



## BIOC—SAMPLE 4-YEAR PLAN\*

ACE = Achievement-Centered Education    CDR = College Distribution Requirements

### FIRST SEMESTER

BIOC 101: Career Opportunities in Biochemistry	1
CHEM 109A, 109L: General Chemistry I with Lab (ACE 4)	4
MATH 106: Calculus I (ACE 3)	5
Written Texts / Research & Knowledge Skills (ACE 1)	3
CDR: Language	3
<b>Total Hours</b>	<b>16</b>

### SECOND SEMESTER

CHEM 110A, 110L: General Chemistry II with Lab	4
MATH 107: Calculus II	4
LIFE 120, 120L: Fundamentals of Biology I with Lab (CDR)	4
CDR: Language	3
<b>Total Hours</b>	<b>15</b>

### THIRD SEMESTER

CHEM 251, 253: Organic Chemistry I with Lab	5
LIFE 121, 121L: Fundamentals of Biology II with Lab	4
Social Sciences (ACE 6)	3
CDR: Written Communication (ACE 1)	3
<b>Total Hours</b>	<b>15</b>

### FOURTH SEMESTER

BIOC 205: Scientific Analysis and Technical Writing	2
CHEM 252, 254: Organic Chemistry II with Lab	5
BIOS 206: General Genetics	4
Communication Skills (ACE 2)	3
CDR: Human Diversity in U.S. Communities	3
<b>Total Hours</b>	<b>17</b>

### FIFTH SEMESTER

BIOC 431: Structure & Metabolism	3
BIOC 433: Biochemistry Laboratory	2
PHYS 141 or PHYS 211 and 221	5
Humanities (ACE 5)	3
CDR: Social Science	3
<b>Total Hours</b>	<b>16</b>

### SIXTH SEMESTER

BIOC 432: Metabolism and Biological Information	3
PHYS 142 or PHYS 212 and 222	5
Global Awareness & Human Diversity (ACE 9)	3
Elective / Minor / Secondary Major / Pre-Professional	3
Elective / Minor / Secondary Major / Pre-Professional	1
<b>Total Hours</b>	<b>15</b>

### SEVENTH SEMESTER

CHEM 221: Elementary Quantitative Analysis	4
BIOS 312 and BIOS 313 or 314	5
Ethics / Civics / Stewardship (ACE 8)	3
Elective / Minor / Secondary Major / Pre-Professional	1
<b>Total Hours</b>	<b>13</b>

### EIGHTH SEMESTER

BIOC 435: Advanced Topics in Biochemistry (ACE 10)	3
CHEM 471: Physical Chemistry	3
Fine Arts (ACE 7)	3
Elective / Minor / Secondary Major / Pre-Professional	3
<b>Total Hours</b>	<b>12</b>

\*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.