BIOCHEMISTRY (CASNR)

Description

The Department of Biochemistry offers studies leading to a bachelor of science (BS) or a combined bachelors and masters degree (BS and MS) in biochemistry. The training offered is suitable for a professional career in biochemistry which may lead to employment in various industries involved in the manufacture or processing of chemicals, foods, feeds, and pharmaceuticals; or federal agencies such as the Food and Drug Administration, U.S. Department of Agriculture, U.S. Public Health Service, and Environmental Protection Agency. The program is also suitable as preparation for graduate studies leading to academic careers in biochemistry and for professional careers in medicine, dentistry, veterinary medicine and health-related fields. The Department is accredited by the American Society of Biochemistry and Molecular Biology (ASBMB), meaning seniors who sit for the ASBMB certification exam are recognized as earning a certified degree if they receive a qualifying score.

The combined bachelors and masters degree in biochemistry is especially tailored for highly motivated undergraduate students with superior ability who seek additional training to further their career goals. This research thesis-based program is designed to provide opportunities to students to carry out and interpret contemporary research.

Graduate Work. Advanced degrees of master of science and doctor of philosophy are available. For details, consult the Graduate Studies Catalog.

Laboratory Fee and Deposit. Students who enroll in laboratory courses in the Department of Biochemistry may be required to pay a small nonrefundable cash fee to defray the cost of materials consumed in the course and a deposit to cover the cost of replacing or repairing equipment the student may damage in the laboratory.

College Requirements

College Admission

Requirements for admission into the College of Agricultural Sciences and Natural Resources (CASNR) are consistent with general University admission requirements (one unit equals one high school year): 4 units of English, 4 units of mathematics, 3 units of natural sciences, 3 units of social studies, and 2 units of foreign language. Students must also meet performance requirements (ACT composite of 20 or higher OR combined SAT score of 950 or higher OR rank in the top one-half of graduating class; transfer students must have a 2.0 (on a 4.0 scale) cumulative grade point average and 2.0 on the most recent term of attendance. For students entering the PGA Golf Management degree program, a certified golf handicap of 12 or better (e.g., USGA handicap card) or written ability (MS Word file) equivalent to a 12 or better handicap by a PGA professional or high school golf coach is required. For more information, please visit: http://pgm.unl.edu/requirements.

Admission Deficiencies/Removal of Deficiencies

Students who are admitted to CASNR with core course deficiencies must remove these deficiencies within the first 30 credit hours at UNL, or within the first calendar year at UNL, whichever takes longer, excluding foreign languages. Students have up to 60 credit hours to remove foreign language deficiencies. College-level course work taken to remove deficiencies may be used to meet degree requirements in CASNR.

Deficiencies in the required entrance subjects can be removed by completion of specified courses in the University or by correspondence.

The Office of Admissions, Alexander Building (south entrance), City Campus, provides information to new students on how deficiencies can be removed.

College Degree Requirements

Curriculum Requirements

The curriculum requirements of the College consist of three areas: ACE (Achievement-Centered Education); College of Agricultural Sciences and Natural Resources Core; and Degree Program requirements and electives. All three areas of the College Curriculum Requirements are incorporated within the description of the Major/Degree Program sections of the catalog. The individual major/degree program listings of classes insures that a student will meet the minimum curriculum requirements of the College.

Foreign Languages/Language Requirement

Two units of a foreign language are required. This requirement is usually met with two years of high school language.

Minimum Hours Required for Graduation

The College grants the bachelors degree in programs associated with agricultural sciences, natural resources and related programs. Students working toward a degree must earn at least 120 semester hours of credit. A minimum cumulative grade point average of C (2.0 on a 4.0 scale) must be maintained throughout the course of studies and is required for graduation.

Grade Rules

Removal of C-, D and F Grades

Only the most recent letter grade received in a given course will be used in computing a student's cumulative grade point average if the student has completed the course more than once and previously received a grade or grades below C in that course.

The previous grade (or grades) will not be used in the computation of the cumulative grade point average, but it will remain a part of the academic record and will appear on any transcript.

A student can remove from his/her cumulative average a course grade of C-, D+, D, D- or F if the student repeats the same course at the University of Nebraska and receives a grade other than P (pass), I (incomplete), N (no pass), W (withdrew), or NR (no report). If a course is no longer being offered, it is not eligible for the revised grade point average computation process.

For complete procedures and regulations, see the Office of the University Registrar website at http://www.unl.edu/regrec/course-repeats.

Pass/No Pass

Students in CASNR may take any course offered on a Pass/No Pass basis within the 24-hour limitation established by the Faculty Senate. However, a department may specify that the Pass/No Pass status of its courses be limited to non-majors or may choose to offer some courses for letter grades only.

GPA Requirements

A minimum cumulative grade point average of C (2.0 on a 4.0 scale) must be maintained throughout the course of studies and is required for graduation.

Transfer Credit Rules
To be considered for admission, a transfer student, Nebraska resident or nonresident, must have an accumulated average of C (2.0 on a 4.0 scale) and a minimum C average in the last semester of attendance at another college. Transfer students who have completed less than 12 credit hours of college study must submit either ACT or SAT scores.

Ordinarily, credits earned at an accredited college are accepted by the University. The College, however, will evaluate all hours submitted on an application for transfer and reserves the right to accept or reject any of them. Sixty is the maximum number of hours UNL will accept on transfer from a two-year college. Ninety is the maximum number of hours UNL will accept from a four-year college. Transfer credit in the degree program must be approved by the degree program advisor on a Request for Substitution Form to meet specific course requirements, group requirements, or course level requirements in the major. At least 9 hours in the major field, including the capstone course, must be completed at UNL regardless of the number of hours transferred.

The College will accept no more than 10 semester hours of C-, D+, D and D- grades from other schools. The C-, D+, D and D- grades can only be applied to free electives. This policy does not apply to the transfer of grades from UNO or UNK to UNL.

Joint Academic Transfer Programs
The College of Agricultural Sciences and Natural Resources has agreements with many institutions to support joint academic programs. The transfer programs include dual degree programs and cooperative degree programs. Dual degree programs offer students the opportunity to receive a degree from a participating institution and also to complete requirements for a bachelor of science degree in CASNR. Cooperative programs result in a single degree from either UNL or the cooperating institution.

Dual Degree Programs

A to B Programs
The A to B Program, a joint academic program offered by the CASNR and participating community colleges, allows students to complete the first two years of a degree program at the participating community college and continue their education and study in a degree program leading toward a bachelor of science degree.

The A to B Program provides a basic knowledge plus specialized course work. Students transfer into CASNR with junior standing.

Depending on the community college, students enrolled in the A to B Program may complete the requirements for an associate of science at the community college, transfer to UNL, and work toward a bachelor of science degree.

Participating community colleges include:

- Central Community College
- Metropolitan Community College
- Mid-Plains Community College
- Nebraska College of Technical Agriculture
- Northeast Community College
- Southeast Community College
- Western Nebraska Community College

3+2 Programs
Two specialized degree programs in **animal science** and **veterinary science** are offered jointly with an accredited college or school of veterinary medicine. These two programs permit CASNR animal science or veterinary science students to receive a bachelor of science degree from UNL with a degree in animal science or veterinary science after successfully completing two years of the professional curriculum in veterinary medicine at an accredited veterinary school. Students who successfully complete the 3+2 Program, must complete the "Application for Degree" form and provide transcripts to the Credentials Clerk, Office of the University Registrar, 107 Canfield Administration Building, UNL. Students should discuss these degree programs with their academic advisor.

Cooperative Degree Programs
Academic credit from UNL and a cooperating institution is applied towards a four-year degree from either UNL (UNL degree-granting program) or the cooperating institution (non UNL degree-granting program). All have approved programs of study.

UNL Degree-Granting Programs
A UNL degree-granting program is designed to provide students the opportunity to complete a two-year program of study at one of the four-year institutions listed below, transfer to CASNR and complete the requirements for a bachelor of science degree.

Chadron State College. Chadron State College offers a 2+2 program leading to a grassland ecology and management degree program and a transfer program leading to a Bachelor of Science in Agricultural Education in the teaching option.

Wayne State College. Wayne State College offers a 3+1 program leading to a Bachelor of Science in Plant Biology in the ecology and management option.

University of Nebraska at Kearney. Transfer programs are available for students pursuing degree programs leading to a bachelor of science degree.

University of Nebraska at Omaha. The University of Nebraska at Omaha (UNO) cooperates with CASNR in providing four-semester pre-agricultural sciences, pre-natural resources, pre-food science and technology, pre-horticulture and pre-turfgrass and landscape management transfer programs.

A student enrolled in these programs may transfer all satisfactorily completed academic credits identified in the suggested program of study, and enter CASNR to study toward a degree program leading to a bachelor of science degree. The total program would require a minimum of four years or eight semesters (16 credit hours/semester or 120 credit hours).

UNL CASNR faculty teach horticulture and food science and technology courses at UNO to assist an urban population in better understanding the food processing, horticulture, and landscape horticulture industries.

For more information, contact the CASNR Dean's Office, 800-472-8800, ext. 2541.

Non UNL Degree-Granting Programs
The CASNR cooperates with other institutions to provide course work that is applied towards a degree at the cooperating institution. Pre-professional programs offered by CASNR allow students to complete the first two or three years of a degree program at UNL prior to transferring and completing a degree at the cooperating institution.

Chadron State College—Range Science. The 3+1 Program in range science allows Chadron State College students to pursue a range science degree through Chadron State College. Students complete three years of

course work at Chadron State College and one year of specialized range science course work (32 credit hours) at CASNR.

Dordt College (Iowa) – Agricultural Education: Teaching Option. This program allows students to pursue an Agricultural Education Teaching Option degree leading toward a bachelor of science in agricultural education. Students at Dordt College will complete 90 credit hours in the Agricultural Education: Teaching Option Transfer Program.

Residency
Students must complete at least 30 of the total hours for their degree using UNL credits. At least 18 of the 30 credit hours must be in courses offered through CASNR[1] (>299) including the appropriate ACE 10 degree requirement or an approved ACE 10 substitution offered through another UNL college and excluding independent study regardless of the number of hours transferred. Credit earned during education abroad may be used toward the residency requirement if students register through UNL and participate in prior-approved education abroad programs. UNL open enrollment and summer independent study courses count toward residence.

[1] *Includes courses taught by CASNR faculty through interdisciplinary prefixes (e.g., LIFE, MBIO, ENVR, SCIL, EAEP, HRTM, ENSC) and CASNR crosslisted courses taught by non-CASNR faculty.*

Online and Distance Education
There are many opportunities to earn college credit online through the University of Nebraska–Lincoln. Some of these credits may be applicable not only as elective credits, but also toward the fulfillment of the College's education requirements. Credits earned online may count toward residency. However, certain offerings may not be counted toward scholarship requirements or academic recognition criteria.

For further information, contact:

Office of Online and Distance Education
University of Nebraska–Lincoln
305 Brace Labs
Lincoln, NE 68588-0109
402-472-4681
http://online.unl.edu/

Independent Study Rules
Students wishing to take part in independent studies must obtain permission; complete and sign a contract form; and furnish copies of the contract to the instructor, advisor, departmental office, and the Dean's Office. The contract should be completed before registration. Forms are available in 103 Agricultural Hall or online at the CASNR website.

Independent study projects include research, literature review or extension of course work under supervision and evaluation of a departmental faculty member.

Students may only count 12 hours of independent study toward their degrees and no more than 6 hours can be counted during their last 36 hours earned, excluding senior thesis, internships, and courses taught under an independent study number.

Other College Degree Requirements

Capstone Course Requirement
A capstone course is required for each CASNR degree program. A capstone course is defined as a course in which students are required to integrate diverse bodies of knowledge to solve a problem or formulate a policy of societal importance.

ACE Requirements

All students must fulfill the Achievement Centered Education (ACE) requirements. Information about the ACE program may be viewed at www.ace.unl.

The minimum requirements of CASNR reflect the common core of courses that apply to students pursuing degrees in the college. Students should work with an advisor to satisfy ACE outcomes 1, 2, 3, 4, 6 and 10 with the college requirements.

Catalog Rule

Students must fulfill the requirements stated in the catalog for the academic year in which they are first admitted to UNL or when they were first admitted to a Joint Academic Transfer Program. In consultation with advisors, a student may choose to follow a subsequent catalog for any academic year in which they are admitted to and enrolled as a degree-seeking student at UNL in the College of Agricultural Sciences and Natural Resources. Students must complete all degree requirements from a single catalog year. The catalog which a student follows for degree requirements may not be more than 10 years old at the time of graduation.

Learning Outcomes

Majors in biochemistry will be able to:

1. Apply the basic principles of the physical sciences to the study of biological systems to explain how organisms consume and convert energy to enable the processes of life.
2. Attribute the function and regulation of biomolecules to specific macromolecular structures through the use of quantitative and analytical computational techniques.
3. Explain the flow of information through biological systems and predict the impact of environmental or biological variables on system output.
4. Analyze, interpret, critique and communicate data and ideas concerning topics at the forefront of biochemistry.

Major Requirements

Specific Major Requirements

Biochemistry Core		
SCIL 101	Science and Decision-Making for a Complex World	3
BIOC 101	Career Opportunities in Biochemistry	1
BIOC 205	Scientific Analysis and Technical Writing	2
BIOC 431 / BIOS 431 / CHEM 431	Structure and Metabolism	3
BIOC 432 / BIOS 432 / CHEM 432	Metabolism and Biological Information	3
BIOC 433 / BIOS 433 / CHEM 433	Biochemistry Laboratory	2
BIOC 435	Advanced Topics in Biochemistry (ACE 10)	3
Credit Hours Subtotal:		17
Natural Sciences		
LIFE 120	Fundamentals of Biology I (ACE 4)	3

LIFE 120L	Fundamentals of Biology I laboratory (ACE 4)	1
LIFE 121	Fundamentals of Biology II	3
LIFE 121L	Fundamentals of Biology II Laboratory	1
BIOS 206	General Genetics	4
or AGRO 215 / HORT 215 / TLMT 215	Genetics	
BIOS 312	Microbiology	3
BIOS 313	Molecular Microbiology Laboratory	1-2
or BIOS 314	Microbiology Laboratory	
Select one sequence of the following:		11-12
CHEM 109 & CHEM 110 & CHEM 221	General Chemistry I and General Chemistry II and Elementary Quantitative Analysis	
CHEM 113 & CHEM 114 & CHEM 221	Fundamental Chemistry I and Fundamental Chemistry II and Elementary Quantitative Analysis	
Select one sequence of the following:		4-5
CHEM 251 & CHEM 253	Organic Chemistry I and Organic Chemistry I Laboratory	
CHEM 261 & CHEM 263	Organic Chemistry and Organic Chemistry Laboratory	
Select one sequence of the following:		4-5
CHEM 252 & CHEM 254	Organic Chemistry II and Organic Chemistry II Laboratory	
CHEM 262 & CHEM 264	Organic Chemistry and Organic Chemistry Laboratory	
CHEM 471	Physical Chemistry	4
or CHEM 481	Physical Chemistry I	
Select one sequence of the following:		10
PHYS 141 & PHYS 142	Elementary General Physics I and Elementary General Physics II	
PHYS 211 & PHYS 212 & PHYS 221 & PHYS 222	General Physics I and General Physics II and General Physics Laboratory I and General Physics Laboratory II	
Credit Hours Subtotal:		49
Mathematics and Statistics		
MATH 106	Calculus I (ACE 3)	5
MATH 107	Calculus II	4
Credit Hours Subtotal:		9
Communications		
Written Communication (ACE 1)		
Select one of the following:		3
ENGL 150	Writing and Inquiry	
ENGL 151	Writing and Argument	
ENGL 254	Writing and Communities	
JGEN 120	Basic Business Communication	
JGEN 200	Technical Communication I	
JGEN 300	Technical Communication II	
Communication and Interpersonal Skills (ACE 2)		
Select one of the following:		3
ALEC 102	Interpersonal Skills for Leadership	
COMM 101	Communication in the 21st Century	
COMM 209	Public Speaking	
COMM 210	Communicating in Small Groups	
COMM 215	Visual Communication	
COMM 286	Business and Professional Communication	
JGEN 300	Technical Communication II	
MRKT 257	Sales Communication	
NRES 301	Environmental Communication Skills	
TMFD 121	Visual Communication and Presentation	
Credit Hours Subtotal:		6
Economics, Humanities, and Social Sciences		
Select one of the following:		3
ECON 200	Economic Essentials and Issues	
ECON 211	Principles of Macroeconomics	
ECON 212	Principles of Microeconomics (ACE 8)	
Select one course each from ACE outcomes 5, 6, 7, and 9		12
Credit Hours Subtotal:		15
Free Electives		
Select 20-24 credits		20-24
Credit Hours Subtotal:		24
Total Credit Hours		120

NOTE: Within the same subject matter area, students may request a more advanced course be substituted for a required course.

Advanced Placement and International Baccalaureate Credit

Students who earned AP or IB credit for general chemistry in high school are still required to complete a freshman-level chemistry sequence at an accredited post-secondary institution. These students are encouraged, but not required, to take CHEM 113 Fundamental Chemistry I/CHEM 114 Fundamental Chemistry II rather than CHEM 109 General Chemistry I/CHEM 110 General Chemistry II. High school dual enrollment credit is not included in this policy.

Additional Major Requirements

Grade Rules

C- and D Grades

No C- or D grades can be applied toward the biochemistry minor or biochemistry degree requirements in any of the courses listed under the following sections of **Specific Major Requirements**: Biochemistry Core, Natural Sciences, and Mathematics and Statistics.

Pass/No Pass

Students in biochemistry must take the courses listed under **Specific Major Requirements** as graded only. Pass/No Pass is not allowed in: Biochemistry Core, Natural Sciences, and Mathematics and Statistics.

Requirements for Minor Offered By Department

Select a minimum of 18 credit hours of graded course work to include the following courses:

BIOC 431 / BIOS 431 / CHEM 431	Structure and Metabolism	3

BIOC 432 / BIOS 432 / CHEM 432	Metabolism and Biological Information	3
BIOS 206	General Genetics	4
or AGRO 215 / HORT 215 / TLMT 215	Genetics	
BIOS 312	Microbiology	3
BIOS 313	Molecular Microbiology Laboratory	1-2
or BIOS 314	Microbiology Laboratory	
CHEM 252	Organic Chemistry II	3
or CHEM 262	Organic Chemistry	
CHEM 254	Organic Chemistry II Laboratory	1-2
or CHEM 264	Organic Chemistry Laboratory	
Total Credit Hours		18-20

BIOC 101 Career Opportunities in Biochemistry
Prerequisites: Interest in becoming a biochemistry major.
Description: Introduction to the field of biochemistry and faculty research interests in the Center for Biochemistry. Exploration of careers in biochemistry.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LEC

BIOC 205 Scientific Analysis and Technical Writing
Prerequisites: Biochemistry major or minor. LIFE 120 and CHEM 109.
Notes: BIOC 101 and CHEM 110 suggested to be taken prior to this course or concurrent enrollment.
Description: Data analysis and presentation, hypothesis-driven research execution and various types of scientific writing with detailed examination of high impact biochemistry research literature.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

BIOC 321 Elements of Biochemistry
Prerequisites: CHEM 255 (preferred) or CHEM 251; BIOS 101 and BIOS 101L or LIFE 120 and LIFE 120L
Description: Structure and function of proteins, carbohydrates, lipids and nucleic acids; enzymes; principal metabolic pathways; and biochemical expression of genetic information.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: VBMS 410

BIOC 321L Laboratory for Elements of Biochemistry
Prerequisites: Parallel BIOC 321
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LAB

BIOC 431 Structure and Metabolism
Crosslisted with: BIOC 831, BIOS 431, BIOS 831, CHEM 431, CHEM 831
Prerequisites: CHEM 252 or CHEM 262 with a grade of C or better. LIFE 120 and BIOS 206 are recommended.
Notes: First course of a two-semester, comprehensive biochemistry course sequence.
Description: Structure and function of proteins, nucleic acids, carbohydrates and lipids; nature of enzymes; major metabolic pathways of catabolism; and biochemical energy production.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: VBMS 410

BIOC 432 Metabolism and Biological Information
Crosslisted with: BIOC 832, BIOS 432, CHEM 432, CHEM 832, BIOS 832
Prerequisites: BIOC 431/831 with a grade of C or better, BIOS 206 or AGRO 215.
Notes: Continuation of BIOC 431/831.
Description: Major metabolic pathways of anabolism, structural and biochemical aspects of biological information flow and use in biotechnology.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
Prerequisite for: BIOC 435; BIOC 934, BIOS 934, CHEM 934

BIOC 433 Biochemistry Laboratory
Crosslisted with: BIOC 833, BIOS 433, BIOS 833, CHEM 433, CHEM 833
Prerequisites: BIOC 431/831 (or concurrent enrollment) or CHEM 435/835.
Description: Introduction to techniques used in biochemical and biotechnology research, including measurement of pH, spectroscopy, analysis of enzymes, chromatography, fractionation of macromolecules, electrophoresis, and centrifugation.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

BIOC 434 Plant Biochemistry
Crosslisted with: AGRO 434, BIOS 434, CHEM 434, AGRO 834, BIOC 834, BIOS 834, CHEM 834
Prerequisites: BIOC/BIOS/CHEM 431/831.
Description: Biochemical metabolism unique to plants. Relationships of topics previously acquired in general biochemistry to biochemical processes unique to plants. Biochemical mechanisms behind physiological processes discussed in plant or crop physiology.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

BIOC 435 Advanced Topics in Biochemistry
Prerequisites: BIOC/BIOS/CHEM 432/832 with a grade of C or better
Description: Application of general biochemistry knowledge to current topics in the life sciences; literature research and seminar.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
ACE: ACE 10 Integrated Product

BIOC 437 Research Techniques in Biochemistry
Crosslisted with: BIOC 837, BIOS 437, BIOS 837
Prerequisites: BIOC/BIOS/CHEM 433/833, or permission
Description: Methods approach to systems biology analysis. Molecular identification and quantification employing techniques such as mass spectrometry, chromatography, electrophoretic fractionation, transcriptomics, protemics and metabolomics. Data and pathway analysis with computational methods.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Format: LEC

BIOC 439 Dynamics of Biochemical and Biological Networks
Crosslisted with: BIOC 839, BIOS 439, BIOS 839
Prerequisites: BIOS 206, BIOC 321 or BIOC 431 (or equivalent)
Description: To introduce and integrate, students in biochemistry and other life sciences, to the field of computational modeling of biochemical and biological network systems into a seamless curriculum.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

BIOC 442 Computational Biology
Crosslisted with: BIOC 842, STAT 842, STAT 442
Prerequisites: Any introductory course in biology, or genetics, or statistics.
Description: Databases, high-throughput biology, literature mining, gene expression, next-generation sequencing, proteomics, metabolomics, system biology and biological networks.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

BIOC 486 Advanced Topics in Biophysical Chemistry
Crosslisted with: BIOC 886, BIOS 486, BIOS 886, CHEM 486, CHEM 886
Prerequisites: CHEM 471/871 or 481/881.
Description: Applications of thermodynamics to biochemical phenomena, optical properties of proteins and polynucleotides, and kinetics of rapid reactions.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

BIOC 498 Undergraduate Research
Prerequisites: Permission.
Description: Research on a specific biochemical project under the supervision of a biochemistry faculty member.
Credit Hours: 1-6
Min credits per semester: 1
Max credits per semester: 6
Max credits per degree: 6
Format: IND

BIOC 499H Honors Thesis
Prerequisites: Good standing in the University Honors Program or by invitation. AGRI 299H recommended.
Description: Conduct a scholarly research project and write a University Honors Program or undergraduate thesis.
Credit Hours: 1-6
Min credits per semester: 1
Max credits per semester: 6
Max credits per degree: 6
Format: IND

PLEASE NOTE
This document represents a sample 4-year plan for degree completion with this major. Actual course selection and sequence may vary and should be discussed individually with your college or department academic advisor. Advisors also can help you plan other experiences to enrich your undergraduate education such as internships, education abroad, undergraduate research, learning communities, and service learning and community-based learning.

Icon Legend: Critical

16 HR TERM 1

Biochemistry Core

complete BIOC 101

1hr

C

ACE 4 Chemistry

complete CHEM 109

4hr

C

College Algebra Reqt

complete MATH 106

5hr

ACE 1 Written Comm

complete 1 from ENGL 150, ENGL 151, ENGL 254, JGEN 120, JGEN 200, JGEN 300

3hr

College Course

complete SCIL 101

3hr

15 HR TERM 2

ACE 4 Chemistry

complete CHEM 110

4hr

C

ACE 3 Mathematics

complete MATH 107

4hr

C

ACE 4 Life Science

complete LIFE 120, LIFE 120L

4hr

C

Completion of the Life Sequence becomes critical to your success in the major if not completed by the fourth term of enrollment.

ACE 2 Comm Skills

complete 1 from NRES 260, ALEC 102, COMM 101, COMM 209, COMM 215, COMM 286, JGEN 300, MRKT 257, TMFD 121, NRES 301

3hr

14 HR TERM 3

Organic Chem I And Lab

complete CHEM 251, CHEM 253

4hr

C

ACE 4 Life Science

complete LIFE 121, LIFE 121L

4hr

C

Completion of the Life Sequence becomes critical to your success in the major if not completed by the fourth term of enrollment.

ACE 8 Economics

complete 1 from ECON 200, ECON 211, ECON 212

3hr

Electives

complete Any Course

3hr

16 HR TERM 4

Organic Chem II And Lab

complete CHEM 252, CHEM 254

4hr

C

CHEM 252 becomes critical to your success in the major if not completed by the fifth term of enrollment.

Genetics

complete either BIOS 206 or AGRO 215

4hr

C

BIOS 206 or AGRO 215 becomes critical to your success in the major if not completed by the sixth term of enrollment.

ACE 5 Humanities

complete 1 from ACE5

3hr

Electives

complete Any Course

3hr

Biochemistry Core

complete BIOC 205

2hr

C

14 HR TERM 5

Biochemistry Core

complete BIOC 431

3hr

C

BIOC 431 becomes critical to your success in the major if not completed by the sixth term of enrollment.

ACE 4 Physics

complete PHYS 141

5hr

C

ACE 6 Social Sciences

complete 1 from ACE6

3hr

Microbiology

complete BIOS 312

3hr

C

16 HR TERM 6

Biochemistry Core

complete BIOC 432

3hr

C

BIOC 432 becomes critical to your success in the major if not completed by the seventh term of enrollment.

Biochemistry Core

complete BIOC 433

2hr

C

ACE 4 Physics

complete PHYS 142

5hr

C

ACE 9 Global/Human Divers

complete 1 from ACE9

3hr

Electives

complete Any Course

3hr

14 HR TERM 7

ACE 4 Chemistry

complete CHEM 221

4hr

C

Microbiology

complete BIOS 314

1hr

C

ACE 7 Arts

complete 1 from ACE7

3hr

Electives

complete Any Course

6hr

14 HR TERM 8

Biochemistry Capstone

complete BIOC 435

3hr

Physical Chemistry

complete CHEM 471

3hr

C

Electives

complete Any Course

8hr

Graduation Requirements

1. Performance Measure: 2.00 GPA required for graduation.
2. ***Total Credits Applying Toward 120 Total Hours***