

B.S. BIOCHEMISTRY

CATALOG YEAR 2022-2023

GENERAL EDUCATION REQUIREMENTS

English Composition

| | | |
|-----------------------|---|-----|
| ENGL 101 or 107 | 3 | ___ |
| ENGL 102 or 108 | 3 | ___ |
| Or | | |
| ENGL 109H | 3 | ___ |

Foundations Math *(Placement may require pre-requisite coursework prior to completion of this requirement.)*

| | | |
|---|---|-----|
| MATH 122A & B (5) or MATH 125 (3) | 3 | ___ |
|---|---|-----|

Second Language

| | | |
|--------------------------------|-----|-----|
| 2nd semester proficiency | 4-5 | ___ |
|--------------------------------|-----|-----|

| | | |
|---|---|-----|
| UNIV 101: Intro to the General Education Experience..... | 1 | ___ |
|---|---|-----|

Exploring Perspectives

| | | |
|-------------------------|---|-----|
| Artist | 3 | ___ |
| Humanist | 3 | ___ |
| Natural Scientist | 3 | ___ |
| Social Scientist..... | 3 | ___ |

Building Connections

| | | |
|----------------|---|-----|
| Course 1 | 3 | ___ |
| Course 2 | 3 | ___ |
| Course 3 | 3 | ___ |

| | | |
|--|---|-----|
| UNIV301: General Education Portfolio..... | 1 | ___ |
|--|---|-----|

| | | |
|-------------------------------|----|-----|
| 32 Units Minimum | 32 | ___ |
|-------------------------------|----|-----|

Note: 9 units may be used to fulfill GE requirements while double-dipping with requirements in a major, pre-major, or minor.

BIOC FOUNDATION COURSES

General Chemistry (with labs)

| | | |
|--|---|-----|
| CHEM 151 OR 141/143 OR 161/163..... | 4 | ___ |
| CHEM 152 OR 142/144 OR 162/164 | 4 | ___ |

Biology

| | | |
|---|---|-----|
| MCB 181R - Introductory Biology I | 3 | ___ |
| MCB 181L - Introductory Biology I Lab | 1 | ___ |
| ECOL 182R - Introductory Biology II..... | 3 | ___ |
| ECOL 182L - Introductory Biology II Lab 1 | 1 | ___ |

Mathematics (Calculus I, Calculus II, Calculus III)

| | | |
|--|-----|-----|
| MATH 122A&B OR 125..... | 3-5 | ___ |
| MATH 129 | 3 | ___ |
| CHEM380 (F) OR MATH 223 OR MATH 254..... | 3 | ___ |

Physics (Introductory Physics)

| | | |
|---|------|-----|
| PHYS 140 OR 141 OR 161H | 3- 4 | ___ |
| PHYS 240 OR 241 OR 261H | 3- 4 | ___ |

BIOC MAJOR COURSEWORK

(GRADE OF C OR HIGHER REQUIRED FOR ALL MAJOR COURSEWORK)

Organic Chemistry

First Semester Lecture and Lab

| | | |
|--|-----|-----|
| CHEM 241A (F,S,SS) OR 246A (F) OR 242A (F) | 3 | ___ |
| CHEM 243A (F,S,SS) OR 247A (F) OR 244A (F)..... | 1-2 | ___ |

Second Semester Lecture and Lab

| | | |
|--|-----|-----|
| CHEM 241B (F,S,SS) OR 246B (S) OR 242B (S) | 3 | ___ |
| CHEM 243B (F,S,SS) OR 247B (S) OR 244B (S)..... | 1-2 | ___ |

Biochemistry (19 units)

| | | |
|---|---|-----|
| BIOC 296B Intro to Biochemical Research (F, S)..... | 1 | ___ |
| BIOC 462A – Biochemistry (F)..... | 4 | ___ |
| BIOC 462B - Biochemistry (S) | 4 | ___ |
| BIOC 463A – Biochemical Lab Techniques (F, S)..... | 4 | ___ |
| BIOC 498(H) – Senior Capstone/Thesis (3/3) | 6 | ___ |

Physical Chemistry

| | | |
|----------------------------------|---|-----|
| CHEM 480A (F,S) | 3 | ___ |
| CHEM 480B (F,S) or 481 (S) | 3 | ___ |

Biochemistry Electives (4 units required - see page 2 for descriptions):

| | | |
|---|------|-----|
| BIOC 395B | 1 | ___ |
| BIOS 376 | 3 | ___ |
| BME 486..... | 3 | ___ |
| CHEE 477R..... | 3 | ___ |
| CHEM 325, 326, 405A, 405B, 405C, 450..... | 1-3 | ___ |
| CHEM 450..... | 3 | ___ |
| ECOL 320, 326, 346, 474..... | 3-5 | ___ |
| ENVS 474, 477..... | 3 | ___ |
| IMB401..... | 4 | ___ |
| MATH 363, 376..... | 3 | ___ |
| MCB 304, 325, 340, 410, 411, 416A, 425, 480 | 3-5 | ___ |
| MIC 328R, 419, 428R, 452 | 3 | ___ |
| NSC 408, 475..... | 3 | ___ |
| NSCS 307, 310, 430..... | 3-4 | ___ |
| PCOL 410..... | 5 | ___ |
| PHCL 412, 445..... | 3 | ___ |
| PHYS 431..... | 3 | ___ |
| PLS 312, 340, 359, 360, 448A..... | 3 | ___ |
| PSIO 380, 404, 420, 427, 431, 465, 484..... | 3 -4 | ___ |

UNIVERSITY REQUIREMENTS:

- | | |
|--|--|
| <input type="checkbox"/> 120 Total Units | <input type="checkbox"/> 42 Upper Division Units |
| <input type="checkbox"/> 2.0+ Cum GPA | <input type="checkbox"/> 2.0+ Major GPA |
| <input type="checkbox"/> MCWA | <input type="checkbox"/> 30 UA Units |
| <input type="checkbox"/> 18/30 Upper Division UA Units | |
| <input type="checkbox"/> 56+ University Units | |

B.S. BIOCHEMISTRY

Biochemistry Electives

Please consult the Schedule of Classes for specific semester course information

BIOC 395B (1) Scientific Writing
BIOS 376 (3) Introduction to Biostatistics
BME 486 (3) Biomaterial-Tissue Interactions
CHEE 477R (3) Microbiology for Engineers
CHEM 325 (2) Analytical Chemistry
CHEM 326 (2) Analytical Chemistry Lab
CHEM 405A (1) Basic Lab Safety
CHEM 405B (1) Advanced Lab Safety
CHEM 405C (1) Chemical Hygiene and Regulations
CHEM 450 (3) Synthetic and Mechanistic Organic Chemistry
ECOL 320(H) (4-5) Genetics
ECOL 326 (3) Genomics
ENVS 474 (4) Aquatic Plants and the Environment
ENVS 477 (3) Principles of Ecotoxicology
IMB 401 (4) Medical Microbiology and Immunology
MATH 363 (3) Intro. to Statistical Methods
MCB 304 (4-5) Molecular Genetics
MCB 325 (3-4) The Biology of Cancer
MCB 410 (3-4) Cell Biology
MCB 411 (3-4) Molecular Biology
MCB 425 (3) Cancer Discoveries
MCB 480 (3) Intro. to Systems Biology
MIC 328R (3) Microbial Physiology
MCB416A (3) Bioinformatics and Functional Genomic Analysis

MIC 419 (4) Immunology
MIC 452 (3) Antibiotics – A Biological Perspective
NSC 408 (3) Nutritional Biology
NSC 475 (3) Nutrigenomics for the Study of Dis. Prev. & Inter.
NSCS 307 (3-4) Cellular Neurophysiology
NROS 310 (3-4) Molecular and Cellular Biology of Neurons
NROS 430 (3) Neurogenetics
PCOL 410 (5) Medicinal Chemistry
PHCL 412 (3) Intro. to Pharmacology
PHCL 445 (3) Drugs of Abuse
PHYS 431 (3) Molecular Biophysics
PLP 428R (3) Microbial Genetics
PLS 312 (4) Animal and Plant Genetics
PLS 340 (3) Intro. to Biotechnology
PLS 359 (3) Plant Cell Structure and Function
PLS 360 (3) Plant Growth and Physiology
PLS 448a (3) Plant Biochemistry and Metabolic Engineering
PSIO 380 (4) Fundamentals of Human Physiology
PSIO 404 (3) Advanced Topics in Cellular Physiology
PSIO 420 (3) Exercise and Environmental Physiology
PSIO 427 (3) Metabolism and Disease
PSIO 431 (3) Physiology of the Immune System
PSIO 465 (3) Neurophysiology
PSIO 484 (3) Cardiovascular Muscle Biology and Disease