

# B.S. BIOCHEMISTRY

NAME \_\_\_\_\_ SID # \_\_\_\_\_ DATE: \_\_\_\_\_

CATALOG YEAR 2020-2021

EXPECTED GRADUATION DATE \_\_\_\_\_

## GENERAL EDUCATION REQUIREMENTS

### English Composition

ENGL 101 or 107 .....3 \_\_\_\_\_  
 ENGL 102 or 108 .....3 \_\_\_\_\_  
 Or  
 ENGL 109H .....3 \_\_\_\_\_

### Second Language

2<sup>nd</sup> semester proficiency by credit or exam required. ... \_\_\_\_\_

### Individuals and Societies (3 courses)

Tier One \_\_\_\_ 150 A, B, or C .....3 \_\_\_\_\_  
 Tier One \_\_\_\_ 150 A, B, or C .....3 \_\_\_\_\_  
 Tier Two Individuals & Societies course .....3 \_\_\_\_\_

### Traditions and Cultures / Humanities (3 courses)

Tier One \_\_\_\_ 160 A, B, C, or D .....3 \_\_\_\_\_  
 Tier One \_\_\_\_ 160 A, B, C, or D .....3 \_\_\_\_\_  
 Tier Two Humanities course .....3 \_\_\_\_\_

### Tier Two Arts (3 units total)

\_\_\_\_\_ 3 \_\_\_\_\_

Natural Sciences (NATS) - Satisfied by CBC major course work.

### Diversity Emphasis Course

(Gender/Race/Class/Ethnicity/Sexual Orient./Non-Western)

*One course must be taken from the GRCESONW list; Can be double-dipped with Tier One or Tier Two courses*

\_\_\_\_\_ \_\_\_\_\_

## 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 I .....3 \_\_\_\_\_  
 ECOL 182L - Introductory Biology II Lab 1 .....1 \_\_\_\_\_

### Mathematics (Calculus I, & Calculus II, Calculus III)

MATH 122A/B OR 125-5 .....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 CHEM 246A (F) OR 242A (F) .....3 \_\_\_\_\_  
 CHEM 243A (F,S,SS) OR 247A (F) OR CHEM244A (F)...1-2 \_\_\_\_\_

Second Semester Lecture and Lab

CHEM 241B (F,S,SS) OR 246B (S) OR 242B (S) .....3 \_\_\_\_\_  
 CHEM 241B (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):

BIOC 395B .....1 \_\_\_\_\_  
 BIOS 376 .....3 \_\_\_\_\_  
 BME 486 .....3 \_\_\_\_\_  
 CHEE 477R .....3 \_\_\_\_\_  
 CHEM 325 (2), 326 (2) .....2-4 \_\_\_\_\_  
 CHEM 450 .....3 \_\_\_\_\_  
 ECOL 320, 326, 346, 474 .....3-5 \_\_\_\_\_  
 ENVS 474, 477 .....3 \_\_\_\_\_  
 MATH 363, 376 .....3 \_\_\_\_\_  
 MCB 304, 325, 340, 410, 411, 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 .....3 \_\_\_\_\_  
 PHYS 431 .....3 \_\_\_\_\_  
 PLS 312, 340, 359, 360, 448A .....3 \_\_\_\_\_  
 PSIO 380, 404, 420, 431, 484 .....3-4 \_\_\_\_\_

### UNIVERSITY REQUIREMENTS:

120 total units  42 upper division units   
 2.000+ cum GPA  2.000+ major GPA

MCWA complete \_\_\_\_\_ 18 of 30 units upper division \_\_\_\_\_  
 30+ total units at UA \_\_\_\_\_ <60 correspondence/UA exam units \_\_\_\_\_

## Biochemistry Electives

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 450 (3) Synthetic and Mechanistic Organic Chemistry  
ECOL 320 or 320H (4/5) Genetics  
ECOL 326 (3) Genomics  
ENVS 474 (4) Aquatic Plants and the Environment  
ENVS 477 (3) Principles of Ecotoxicology  
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  
MIC 419 (4) Immunology  
MIC 452 (3) Antibiotics – A Biological Perspective

NSC 408 (3) Nutritional Biology  
NSC 475 (3) Nutrigenomics for the Study of Disease Prevention & Intervention  
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  
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 431 (3) Physiology of the Immune System  
PSIO 484 (3) Cardiovascular Muscle Biology and Disease  
PHYS 431 (3) Molecular Biophysics

*Note: Course offerings are subject to change. Please consult the Schedule of Classes for specific semester course information*

## Biochemistry Academic Plan

### 1st Semester Fall

General Chemistry I w/ lab (4)  
MATH 122A (1)  
MATH 122B (4)  
ENGL 101 English Composition (3)  
Tier I General Education (3)

### 3rd Semester Fall

\*Organic Chemistry I Lecture (3)  
\*Organic Chemistry I Lab (1-2)  
MCB 181R Introductory Biology (3)  
MCB 181L Introductory Biology Lab (1)  
**Chem 380**, MATH 223 Calc III or MATH 254 Diffy Q (3-4)  
Second Language (4)  
\*BIOC 296b (1)

### 5th Semester Fall

\*BIOC 462A Biochemistry I (4)  
~\*BIOC 463A Biochemical Lab (4)  
PHYS 141 Physics I w/lab (4)  
Tier I General Education (3)  
\*Biochemistry Elective (3)

### 7th Semester Fall

\*CHEM 480A Physical Chemistry I (3)  
\*BIOC 498 (H) Senior Capstone (3)  
Tier II General Education (3)  
Elective (3)

### 2nd Semester Spring

General Chemistry II w/ lab (4)  
MATH 129 (3)  
ENGL 102 English Composition II (3)  
Tier I General Education (3)

### 4th Semester Spring

\*Organic Chemistry II Lecture (3)  
\*Organic Chemistry II Lab (1-2)  
ECOL 182R Introductory Biology II (3)  
ECOL 182L Introductory Biology II Lab (1)  
Tier I General Education (3)  
Second Language (4)

### 6th Semester Spring

\*BIOC 462B Biochemistry I (4)  
PHYS 241 Physics II w/lab (4)  
Tier II General Education (3)  
\*Biochemistry Elective (3)

### 8th Semester Spring

\*CHEM 480B Physical Chemistry II or CHEM 481 Biophysical (3)  
\*BIOC 498 (H) Senior Capstone (3)  
Tier II General Education (3)  
Elective (3)

\*Denotes grade of C or better required

~Denotes department consent required to enroll.

Note that some courses are offered in the fall or spring only. This checklist indicates BIOCBS requirements. Additional coursework not listed on this page is required in order to graduate. Work with your advisor every semester to be sure you are on track to meet all requirements.