B.S. BIOCHEMISTRY

NAME _____SID # _____DATE:_____

CATALOG YEAR 2021-2022 **EXPECTED GRADUATION DATE _____**

GENERAL EDUCATION REQUIREMENTS

English Composition

ENGL 101 or 107 ..... 3 ____
ENGL 102 or 108 ..... 3 ____
Or
ENGL 109H ..... 3 ____

Second Language

2nd 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

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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 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, 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, 431, 465, 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 UA 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 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 or 320H (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
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
PSIO 465 (3) Neurophysiology

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)

2nd Semester Spring
General Chemistry II w/ lab (4)
MATH 129 (3)
ENGL 102 English Composition II (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 Dif Eq (3-4)
Second Language (4)
*BIOC 296b (1)

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)

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)

6th Semester Spring
*BIOC 462B Biochemistry I (4)
PHYS 241 Physics II w/lab (4)
Tier II 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)

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.