# BACHELOR OF SCIENCE DEGREE IN MOLECULAR AND CELLULAR BIOLOGY

## Systems and Big Data Biology Sub-Plan

**NAME ___________________________**

**SID # ___________________________**

**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)
- Requirement satisfied by MCB major course work.

### Diversity Emphasis Course
- (Gender/Race/Class/Ethnicity/Sexual Orient./Non-Western)
  - One undergraduate course must be taken from the GRCESONW list; certain Tier One and Tier Two courses can also be used to meet this requirement ...

## MCB FOUNDATION COURSES

### Chemistry (General & Organic Chemistry, with labs)
- CHEM 141/143 OR 151 OR 161/163 .................... 4 ___
- CHEM 142/144 OR 152 OR 162/164 .................... 4 ___
- CHEM 241A & 243A (F, S, SS)* .................................... 3 ___ 1 ___
- CHEM 241B & 243B (F, S, SS)* .................................... 3 ___ 1 ___
  - * Calculated into major GPA

### Mathematics (Calculus I, & Calculus II)
- MATH 122A/B OR 125 (F, S, SS) ............................. 3-5 ___
- MATH 129 (F, S, SS) .................................................. 3 ___

### Physics (Introductory Physics)
- PHYS 102/181 OR 141 OR 161H (F, S, SS) ....3 ___ 1 ___ or 4___
- PHYS 103/182 OR 241 OR 261H (F, S, SS) ....3 ___ 1 ___ or 4___

## MCB MAJOR (39 Unit Minimum)

### Core Requirements (21 units)
- MCB 195 or 295 – MCB Colloquia (F, S)............... 1 ___
- MCB 181R - Introductory Biology I (F, S) ................. 3 ___
- MCB 181L - Introductory Biology I Lab (F, S) ........... 1 ___
- ECOL 182R - Introductory Biology II (F, S) ............. 3 ___
- ECOL 182L - Introductory Biology II Lab (F, S) ....... 1 ___
- MCB 301 - Molecular Basis of Life (S)* ................. 4 ___
- MCB 304 - Molecular Genetics (F)* ..................... 4 ___
- MCB 305 - Cell & Developmental Biology (S)* ....... 4 ___
  - *MCB 301, MCB 304, and MCB 305 must be taken in sequence.

### Systems and Big Data Biology Sub-Plan

#### Upper Division Elective Courses (18 unit minimum):

### Required Courses (9 units):
- MCB 315 Quantitative Biology (F, even years) ....... 3 ___
- MCB 480 Introduction to Systems Biology (S) ....... 3 ___
- MCB 447 Big Data in Biology and Biomedicine (F, odd years)... 3 ___

#### Choose one Lab/Research/Internship Requirement (3 units):
- MCB 392/492 Directed Research (F, S, SS) .................. 3 ___
- MCB 399/499 Independent Study (F, S, SS) ............ 3 ___
- MCB 399H/499H Honors Independent Study (F, S, SS) .... 3 ___
- MCB 493 Internship Experience (F, S, SS) .......... 3 ___
- MCB 416A Statistical Bioinfo. & Genomic Analysis (S, even yr.) 3 ___

#### Choose additional required elective courses (6 units):
- Choose upper division electives to meet requirement - see back of checklist for elective options.
  - Writing Emphasis Elective ................................... 3 ___
  - Upper Division MCB Elective: ............................... 3 ___

## SUPPORTING COURSEWORK REQUIRED FOR SUB-PLAN

### UNIVERSITY REQUIREMENTS:

- 120 total units □ 42 upper division units □
- 2.000+ cum GPA □ 2.000+ major GPA □
- MCWA complete □ Final 18 of 30 units complete □
- 30+ total units at UA □ 18+ MCB units at UA □
- <60 correspondence/UA exam units □
Systems and Big Data Biology Sub-Plan Upper Division Elective Courses:

**Choose one Writing Emphasis Elective (3 unit min.):**
- MCB 404 Bioethics – 3 units (F, S, SS)
- MCB 413 Why is the Grass Green- Communicating with the Public – 3 units (F)
- MCB 422 Problem Solving with Genetic Tools – 3 units (F, SS)
- MCB 473 Recombinant DNA Methods and Applications – 3 units (S)
- MCB 498 Senior Capstone – 3 units (F, S)
- MCB 498H Senior Honors Thesis – 3 units (F, S)
- ECOL 379 Evidence Based Medicine – 3 units (S)

**Choose one MCB Elective (3 unit min.):**
- MCB 325 Biology of Cancer – 3 units (F)
- MCB 422 Problem Solving with Genetic Tools – 3 units (F, SS)
- MCB 425 Cancer Discoveries – 3 units (S)
- MCB 442 Sex, Crime and Disease – Human Genetics today – 3 units (S)
- MCB 482 Modeling Human Disease – 3 units (S)

* cannot be used to fulfill two sub-plan requirements

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