# BACHELOR OF SCIENCE DEGREE IN MOLECULAR AND CELLULAR BIOLOGY

## Molecular and Cellular Biology Sub-Plan

### NAME ____________________________  SID # ____________________________

**CATALOG YEAR 2019-2020**  **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
- CHEM 241B & 243B (F, S, SS)* .................. 3

* Calculated into major GPA

#### Mathematics (Calculus I, & Calculus II or Biostatistics)

- MATH 122A/B **OR** 125 **OR** MATH 119A* (F, S, SS) ....... 3-5
- MATH 129 **OR** MATH 263 (F, S, SS) ......................... 3

* MATH 119A is not a pre-requisite for MATH 129

#### Physics (Introductory Physics)

- PHYS 102/181 **OR** 141 **OR** 161H (F, S, SS) .......... 3
- PHYS 103/182 **OR** 241 **OR** 261H (F, S, SS) .......... 3

### 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 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.

#### Molecular and Cellular Biology Sub-Plan

Upper Division Elective Courses (18 unit minimum):

Choose three of the following courses (9 units):

- MCB 325 Biology of Cancer (F) ............................... 3
- MCB 422 Problem Solving with Genetic Tools (F, SS) .. 3
- MCB 425 Cancer Discoveries (S) ............................ 3
- MCB 480 Introduction to Systems Biology (F) .......... 3
- MCB 482 Modeling Human Disease (S) .................... 3
- MCB 442 Human Genetics: Sex, Crime and Disease (S) 3
- MCB 447 Big Data in Biology and Medicine (F) ....... 3
- BIOC 385 Metabolic Biochemistry** (F, S, SS) ......... 3

** The combo of BIOC 462A and BIOC 462B for BIOC 385 is an approved option.

Choose one Lab/Research/Internship Requirements (3 units):

- MCB 399/499 Independent Study (F, S, SS) .............. 3
- MCB 473 Recombinant DNA (F) ............................. 3
- MCB 483 Internship Experience (F, S, SS) .............. 3
- MCB 492 Directed Research (F, S, SS) .................... 3
- MCB 498H Honors Thesis (F, S) ............................. 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

### 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 ___

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**MOLECULAR AND CELLULAR BIOLOGY: 2019-2020 CATALOG YEAR**

**MARCH 29, 2021**
Molecular and Cellular Biology Sub-Plan Upper Division Elective Courses:

**Choose one Writing Emphasis Elective (3 unit min.):**
- MCB 404 Bioethics (Recommended) – 3 units (F, S, SS)
- MCB 413 Why is the Grass Green – Communicating Science to the Public – 3 units (F)
- MCB 422 Problem Solving w/ Genetic Tools – 3 units (F, SS)*
- 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 315 Quantitative Biology – 3 units (F, even years only)
- MCB 325 Biology of Cancer – 3 units (F)*
- MCB 396i Career Explorations & Professional – 2 units (F)
- MCB 397A Biology Outreach Development – 1 unit (F)
- MCB 397C STEM Outreach and Recruitment – 1 unit (S)
- MCB 416A Bioinformatics and Functional Genomic Analysis – 3 units (S, even years only)
- MCB 413 Why is the Grass Green – Communicating Science to the Public – 3 units (F)
- MCB 422 Problem Solving w/ Genetic Tools – 3 units (F, SS)*
- MCB 425 Cancer Discoveries – 3 units (S)*
- MCB 442 Human Genetics: Sex, Crime, and Disease – 3 units (S)*
- MCB 445 Astrobiology and the Molecular History of Life on Earth – 3 units (S)*
- MCB 447 Big Data in Molecular Biology and Medicine – 3 units (F, odd years only)*
- MCB 473 Recombinant DNA Methods & Applications – 4 units (S)
- MCB 480 Introduction to Systems Biology – 3 units (F)*
- MCB 482 Modeling Human Disease – 3 units (S)*
- MCB 391 Lab Preceptorship – 3 units (F, S)
- MCB 491 Lab Preceptorship – 3 units (F, S)
- MCB 497A Special Tutoring Workshop – 1-5 units (F, S, SS)
- BIOC 384 Foundations in Biochemistry – 3 units (F, S, SS)
- BIOC 462A Biochemistry – 4 units (F)
- ECOL 326 Genomics – 3 units (F, SS)
- ECOL 346 Bioinformatics – 3 units (S)
- MIC 403R Biology of Animal Parasites – 3 units (F)
- MIC 420 Pathogenic Bacteriology – 3 units (F)
- MIC 433 Medical and Molecular Virology – 3 units (S)
- MIC 452 Antibiotics: A Biological Perspective – 3 units (F)
- NROS 430 Neurogenetics – 3 units (S)
- NSCS 440 How to Build a Brain: Mechanisms of Neural Development – 3 units (S)
- PLS 340 Introduction to Biotechnology – 3 units (F)
- PLS 360 Principles of Plant Physiology – 3 units (S)
- PLS 428R Microbial Genetics – 3 units (S)
- PSIO 467 Endocrine Physiology – 3 units (F)
- PSIO 484 Cardiovascular Muscle Biology and 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.