BACHELOR OF SCIENCE DEGREE IN MOLECULAR AND CELLULAR BIOLOGY
Molecular and Cellular Biology Sub-Plan

NAME _____ **SID #** _____

CATALOG YEAR 2024-2025 **EXPECTED GRADUATION DATE** _____

GENERAL EDUCATION REQUIREMENTS (36-38 Units)

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

Foundation Mathematics
MATH 122A/B **OR** *125* **OR** MATH 119A* (F, S, SS) .....3-5 _____
*** MATH 119A is not a pre-requisite for MATH 129**

Second Language
2nd semester proficiency by credit or exam required ..... _____

Intro. to General Education
UNIV 101 ..... 1 ____

Exploring Perspectives (4 courses, 12 units)
Artist ..... 3 ____
Humanist ..... 3 ____
Social Scientist ..... 3 ____
Natural Scientist ....Requirement satisfied by MCB foundations

Building Connections (3 courses, 9 units)
Course One ..... 3 ____
Course Two ..... 3 ____
Course Three ..... 3 ____

General Education Capstone
UNIV 301 ..... 1 ____

MCB FOUNDATION COURSES (27 UNITS)

Chemistry (General & Organic Chemistry, with labs)
CHEM 141/143 ***OR*** 151 ***OR*** 161/163 ***OR*** 181 .....4 ___
CHEM 142/144 ***OR*** 152 ***OR*** 162/164 ***OR*** 182 .....4 ___
CHEM 241A & 243A *OR* 246A & 247A.....3 ____ **1** ____
CHEM 241B & 243B *OR* 246B & 247B)*.....3 ____ **1** ____
*** Calculated into major GPA**

Mathematics (Calculus II or Biostatistics)
MATH 129 ***OR*** MATH 263 (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.

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 (F) ..... 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 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 422 Problem Solving with Genetic Tools (F, SS) ..... 3 ____
MCB 473 Recombinant DNA (S) ..... 3 ____
MCB 493 Internship Experience (F, S, SS) ..... 3 ____
MCB 498 Senior Capstone (F, S) ..... 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____

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 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 422 Problem Solving w/ Genetic Tools – 3 units (F, SS)
MCB 425 Cancer Discoveries – 3 units (S)
MCB 437 Life in Extreme Environments – 3 units (F, S)
MCB 442 Human Genetics: Sex, Crime, and Disease – 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 (F)
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)
NROS 307 Cellular Neurophysiology (F, S, SS)
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)

** courses 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.