BACHELOR OF SCIENCE DEGREE IN MOLECULAR AND CELLULAR BIOLOGY
Systems and Big Data Biology Sub-Plan

NAME _____ **SID #** _____

CATALOG YEAR 2025-2026 **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 ..... ….3-5 ____

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 151 ***OR*** 161/163 ***OR*** 141/143 .....4 ___
CHEM 152 ***OR*** 162/164 ***OR*** 142/144 .....4 ___
CHEM 241A & 243A ***OR*** 242A & 244A*.....3 ____ 1 ____
CHEM 241B & 243B ***OR*** 242B & 244B*.....3 ____ 1 ____
*** Calculated into major GPA**

Mathematics (Calculus II or Biostatistics)

MATH 129 ***OR*** 263 ***OR*** BIOS 376 (F, S, SS) ..... 3 ___

Physics (Introductory Physics)
PHYS 110 ***OR*** 141 ***OR*** 161H (F, S, SS) ….3__ 1__ or 4_____
PHYS 111 ***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 304 - Molecular Genetics (F)* ..... 4 ____
MCB 305 - Cell & Developmental Biology (S)* ..... 4 ____
MCB 306 - Molecular Basis of Life (F)* ..... 4 ____
*MCB 304, MCB 305, and MCB 301 should be taken in sequence. MCB 306 was MCB 301 prior to Fall 2026.

Systems and Big Data Biology Sub-Plan

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

Choose three of the following courses (9 units):
MCB 315 Quantitative Biology (F, even years) ..... 3 ____
MCB 480 Introduction to Systems Biology (F) ..... 3 ____
MCB 447 Big Data in Biology and Biomedicine (F, odd years) .. 3 ____
MCB 416A Bioinformatics and Functional Genomic Analysis (S) 3 ____
ECOL 419 Intro to Modeling in Biology (F) ..... 3 ____

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* ____

SUPPORTING COURSEWORK REQUIRED FOR SUB-PLAN

CSC 250 Essential Comp. ***OR*** BE 434 Biosystems Anal. ***OR*** CSC 110 Intro. to Comp. Programming I ***OR*** ISTA 130 Computational Thinking & Doing (F,S) ..... 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____

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 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)

**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.