

BACHELOR OF SCIENCE DEGREE IN MOLECULAR AND CELLULAR BIOLOGY

Systems and Big Data Biology Sub-Plan

NAME _____

SID # _____

CATALOG YEAR 2026-2027

EXPECTED GRADUATION DATE _____

GENERAL EDUCATION REQUIREMENTS (32 unit minimum)

English Composition

WRIT 101 or 107 3 _____

WRIT 102 or 108 3 _____

Or

WRIT 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 (2 courses, 6 units)

Course One 3 _____

Course Two 3 _____

Civic Institutions (1 course, 3 units)

Course One 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 (42 Unit Minimum)

Core Requirements (24 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 284 – App. of Cellular & Molecular Biology (S) 3 _____

MCB 304 - Molecular Genetics (F)* 4 _____

MCB 305 - Cell & Developmental Biology (S)* 4 _____

MCB 306 - Molecular Basis of Life (F)** 4 _____

*MCB 304, 305, & 306 should be taken in sequence.

**MCB 301 is MCB 306 as of 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 ☐

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.