# BACHELOR OF SCIENCE DEGREE IN MOLECULAR AND CELLULAR BIOLOGY

**Genetics and Human Health Sub-Plan**

**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.

### Genetics and Human Health Sub-Plan

#### Upper Division Electives (18 unit minimum):
- Choose three of the following courses (9 units):  
  - MCB 325 Biology of Cancer (F) ......................... 3 ___
  - MCB 442 Sex, Crime and Disease (S) ................... 3 ___
  - MCB 482 Modeling Human Disease (S) ............... 3 ___
  - BIOL 385 Metabolic Biochemistry (F, S, SS)** ....... 3 ___

**The combination of BIOL 462A and BIOL 462B is an approved option.**

- 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 493 Internship Experience (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 ___

#### SUPPORTING COURSEWORK REQUIRED FOR SUB-PLAN
- MCB 330 Critical Reasoning and Problem Solving in Biomedicine (F) ................. 1 ___

### 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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**GENERAL EDUCATION REQUIREMENTS**

### English Composition
- ENGL 101 or 107 ........................................... 3 ___
- ENGL 102 or 108 ........................................... 3 ___
- 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)

### 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 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 ___ 1 ___ or 4 ___
- PHYS 103/182 **OR** 241 **OR** 261H (F, S, SS) ...... 3 ___ 1 ___ or 4 ___

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**RECOMMENDED COURSES:**

- PSIO 201-Human Anatomy and Physiology I (F, S, SS) 4 units
- PSIO 202-Human Anatomy and Physiology II (F, S, SS) 4 units
Genetics and Human Health 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 Science to the Public – 3 units (F)
- MCB 422 Problem Solving w/ Genetic Tools – 3 units (F, SS)*
- MCB 473 Recombinant DNA Methods & Applications – 4 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 315 Quantitative Biology – 3 units (F, even years only)
- MCB 325 Biology of Cancer – 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 Today: Sex, Crime and Disease – 3 units (S)*
- MCB 447 Big Data in Biology and Medicine – 3 units (F, odd years only)
- MCB 480 Introduction to Systems Biology – 3 units (F)
- MCB 482 Modeling Human Disease – 3 units (S)*
- PSIO 380 Fundamentals of Human Physiology – 4 units (F, S) **

* cannot be used to fulfill two sub-plan requirements
** Cannot take if taking PSIO 201 and PSIO 202

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