# BACHELOR OF SCIENCE DEGREE IN MOLECULAR AND CELLULAR BIOLOGY

## Genetics and Human Health Sub-Plan

### 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, C, or D .......................... 3 ___
- Tier One ____ 150 A, B, C, or D .......................... 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 ___ 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 ___

## 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 Elective Courses (18 unit minimum):**
- Choose three of the following courses (9 units):
  - MCB 325 Biology of Cancer (F) ......................... 3 ___
  - MCB 442 Human Genetics: Sex, Crime and Disease (F) ....... 3 ___
  - MCB 482 Modeling Human Disease (S) .................... 3 ___
  - BIOL 385 Metabolic Biochemistry (F, S, SS) .............. 3 ___
  **The combo of BIOL 462A and BIOL 462B for BIOL 385 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 399H/499H Honors Independent Study (F, S, SS) ....... 3 ___
- MCB 422 Problem Solving with Genetic Tools (F, S, SS) ....... 3 ___
- MCB 493 Internship Experience (F, S, SS) ................... 3 ___
- MCB 498 Senior Capstone (F, S, SS) ......................... 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 ___

## Recommended Courses:

**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 □

**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 (S)
- MCB 422 Problem Solving w/ Genetic Tools – 3 units (F, S, 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, S, SS)*
- MCB 425 Cancer Discoveries – 3 units (S)
- MCB 442 Human Genetics: Sex, Crime, and Disease – 3 units (F)*
- MCB 447 Big Data in Molecular 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
** Must take PSIO 201 before taking PSIO 202
*** 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.