**GENERAL EDUCATION REQUIREMENTS**

**English Composition**  
ENGL 101 or 107 ............................................................. 3    
ENGL 102 or 108 ............................................................. 3    
Or  
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)**  

自然 Sciences (NATS)  
Requirement satisfied by MCB major course work.  

**Diversity Emphasis Course**  
(Non-Western)  
One undergraduate course must be taken from the GCRSEONW 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)**  
MATH 122A/B OR 125 (F, S, SS) .........................3-5  
MATH 129 (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 Lab (F, S) .........................1  
ECOL 182R - Introductory Biology II (F, S) .........................3  
ECOL 182L - Introductory Biology Lab II (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.  

**Systems and Big Data Biology Sub-Plan**  
Upper Division Elective Courses (18 unit minimum):  

**Required Courses (9 units):**  
MCB 315 Quantitative Biology (F, even years) .........................3  
MCB 480 Introduction to Systems Biology (S) .........................3  
MCB 447 Big Data in Biology and Biomedicine (F, odd years) .........................3  

**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 498 Senior Capstone (F, S) ........................................... 3  
MCB 498H Honors Thesis (F, S) ........................................... 3  
MCB 493 Internship Experience (F, S, SS) .........................3  
MCB 416A Bioinformatics and Functional Genomic (F, even yr) .........................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**

**Mathematics**  
MATH 223 Vector Calculus (F, S, SS) .........................3  
MATH 254 or 355 Differential Equations (F, S) .........................3  
MATH 310 Apl. Linear Algebra or 313 Linear Algebra (F, S, SS) .........................3  
MATH 375 Statistical Computing ........................................... 3  

or  
MATH 363 Introduction to Statistics (F, S) .........................3  
and  
CSC 250 Essential Computing for the Sciences (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 413 Why is the Grass Green – Communicating Science to the Public – 3 units (S)
- MCB 422 Problem Solving with Genetic Tools – 3 units (F, S, 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, S, SS)
- MCB 425 Cancer Discoveries – 3 units (S)
- MCB 442 Human Genetics: Sex, Crime, and Disease – 3 units (F)
- MCB 482 Modeling Human Disease – 3 units (S)

* 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.