



# MCDB

## Major Requirements

### MCDB Courses

#### First-Year MCDB Sequence

MCDB 1150 or EBIO 1210 - 3



MCDB 2150 Genetics - 3

MCDB 1161,  
1171, 1181, or  
2171 (2 cr. Lab)  
- 2



#### Molecular and Cellular Biology

MCDB 3135 Molecular Biology - 3

*Pre-requisites: Genetics and Gen Chem 1*

AND

MCDB 3145 Cell Biology - 3

*Pre-requisites: Genetics and Gen Chem 1*

MCDB 3140  
Cell Biology  
Lab - 2

#### Additional Requirements

*Can be taken in any order*

Developmental Biology: MCDB 4650-3

*(Pre-requisites = C- in MCDB 3135 & 3145)*

Advanced requirement: MCDB 4150, 4300, 4312,  
4520, 4777

*(Recommended pre-requisites = C- in MCDB 3135 & 3145)*

MCDB Scientific Reasoning - 3 (See next page)

*(Recommended prereqs = C- in MCDB 3135 & 3145)*

MCDB Electives (See next page)

### Ancillaries

#### Chemistry

CHEM 1021 Introduction to  
Chemistry - 4 *not required*

CHEM 1113 & 1114 General  
Chemistry 1 and Lab - 5

CHEM 1133 & 1134 General  
Chemistry 2 and Lab - 5

CHEM 3331 & 3321 Organic  
Chemistry 1 and Lab - 5

BCHM 4611 Principles of  
Biochemistry - 3

*Students double-majoring in CHEM or  
BCHM should speak with their advisor  
about the BCHM requirement*

#### Math

Statistics

MATH 2510, EBIO 1010, PSYC  
2111 or IPHY 3280 - 3 or 4

OR

Calculus

MATH 1300 - 5

## MCDB Scientific Reasoning Courses

MCDB students will complete one Scientific Reasoning course. Typically 3-5 courses are offered each semester. Below is a list of some potential Scientific Reasoning courses. Please refer to your degree audit for a complete list.

- MCDB 4350 - Microbial Diversity and the Biosphere
- MCDB 4361 - Evolution and Development
- MCDB 4410 - Human Molecular Genetics
- MCDB 4420 - Genetics of Brain and Behavior
- MCDB 4422 - Molec. Biol. of Free Radicals: Role(s) in Oxidative Stress, Signaling, Disease, Aging
- MCDB 4425 - Topics in Membrane Biology: Cell Biology, Physiology and Disease
- MCDB 4426 - Cell Signaling and Developmental Regulation
- MCDB 4427 - Biology of the Visual System
- MCDB 4444 - Cellular Basis of Disease
- MCDB 4471 - Mechanisms of Gene Regulation in Eukaryotes
- MCDB 4550 - Cells, Molecules and Tissues: A Biophysical Approach
- MCDB 4615 - Biology of Stem Cells
- MCDB 4680 - Mechanisms of Aging
- MCDB 4750 - Animal Virology
- MCDB 4790 - Oocytes, Stem Cells, Organisms: Experiments to Discoveries
- MCDB 4810 - Insane in the Membrane: The Biology and Biophysics of the Membrane
- MCDB 4811 - Teaching and Learning Biology

## MCDB Electives

Six hours of MCDB upper-division electives are required for the MCDB major. Any 3000 or 4000 level MCDB course will count, including up to six hours of MCDB independent study (MCDB 4840), Honors Research (MCDB 4980), or Honors Thesis (MCDB 4990).

Electives from other departments: A maximum of five credit hours can be from the list of approved courses. When choosing to take courses from this list, check for prerequisites.

- BCHM 4720 - Metabolic Pathways and Human Disease
- BCHM 4761 - Biochemistry Laboratory
- CHEM 3331 - Organic Chemistry 2 lecture
- CHEM 3341 - Organic Chemistry 2 lab
- EBIO 3400 - Microbiology
- EBIO 3410 - Microbiology lab
- EBIO 4290 - Phylogenetics and Comparative Biology
- EBIO 4370 - Genetically Engineered Organisms
- EBIO 4800 - Topic: "Development, Genes and Evolution"
- EDUC 5215 - Elementary Science Theory and Methods
- EDUC 5315 - Perspectives on Science
- EDUC 5385 - Project-Based Science Instruction
- IPHY 3430 - Human Physiology
- IPHY 3435 - Human Physiology Lab
- NRSC 4072 - Clinical Neuroscience