BIOLOGY, B.S-MOLECULAR AND CELLULAR BIOLOGY

Core Biology Requirements

Code	Title	Credits
BIOL 130	Principles Biology I	4
BIOL 131	Principles Biology II	4
BIOL 304	Genetics	4
BIOL 440	Biology Seminar	1

Core Science and Math

Code	Title	Credits
MATH 140	Statistics I	3
MATH 192	Calculus and Analytic Geometry I	4
PHYS 130		3
PHYS 1130		1
PHYS 131		3
PHYS 1131		1
CHEM 105	General Chemistry I Lecture	3
CHEM 1105	General Chemistry I Recitation/Laboratory	2
CHEM 106	General Chemistry II Lecture	3
CHEM 1106	General Chemistry II Recitation/Laboratory	2
CHEM 207	Organic Chemistry I	3
CHEM 2207	Organic Chemistry I Laboratory	1

Concentration Specific Requirements

Code	Title	Credits
BIOL 230	Cell Biology	4
BIOL 406	Molecular Genetics	4
BIOL 407	Advanced Cell Biology	4
CHEM 208	Organic Chemistry II	3
or CHEM 307	Biochemistry I	
CHEM 2208	Organic Chemistry II Laboratory	1

Concentration Specific Electives (14 Credits)

Code	Title	Credits
BIOL 301	General Physiology	4
BIOL 303	Microbiology	4
BIOL 305	Histology	4
BIOL 335	Essential Concepts in Neuroscience	3
BIOL 401	Developmental Biology	4
BIOL 403	Radiation Biology	4
BIOL 404	Immunology	3
BIOL 418	Scanning Electron Microscopy	4
BIOL 419	Transmission Electron Microscopy	4
BIOL 450	Biology Research	3

Graduates of the MCB Concentration will be able to:

1. Describe of the nature of science and knowledge of the factual and theoretical bases of biology, including mechanisms on the molecular and cellular levels.
2. Differentiate the components of prokaryotic and eukaryotic cells
3. Relate the structure, interaction and regulation of organic molecules to essential functions and metabolic processes and pathways of prokaryotic and eukaryotic cells.
4. Demonstrate knowledge of the structures and functions of and relationships among informational and cell signaling molecules, including their roles in cell division, inheritance, gene expression, phenotype and cell death.
5. Analyze interactions between and among molecules, molecular systems and assemblages, cells and cellular systems, and multicellular entities essential to systems biology.
6. Relate scientific concepts to contemporary issues such as disease processes, inherited disorders, drug resistance, and recombinant DNA and transgenic organisms.
7. Demonstrate understanding of scientific inquiry and explain how scientific knowledge is acquired and validated.
8. Apply quantitative knowledge and reasoning to describe or explain phenomena in the natural world.
9. Compose written and/or oral presentations utilizing scientific information.
10. Develop research methods employing up-to-date scientific tools to study molecular and cellular biology.