**DEPARTMENT OF MOLECULAR BIOLOGY AND BIOCHEMISTRY**

**PROGRAM REQUIREMENTS**

---

**To graduate with a degree in MBB:** A student must complete a minimum of 44 upper division units with a total of 120 units (upper and lower division). **Prerequisite Grade:** For a course to be accepted as fulfilling a prerequisite for any upper division MBB course, a student must have obtained a minimum grade of C.

---

### Major Program (120 units)
All students must complete the lower and upper division core requirements.

#### Lower Division Core
- MBB 222-3 Molecular Biology and Biochemistry
- MBB 231-3 Cell Biology and Biochemistry
- BISC 101-4 General Biology
- BISC 102-4 General Biology
- BISC 202-3 Genetics
- CHEM 121-4 General Chemistry and Laboratory I
- CHEM 122-2 General Chemistry II
- CHEM 126-2 General Chemistry Laboratory II
- CHEM 215-4 Introduction to Analytical Chemistry
- CHEM 281-4 Organic Chemistry I
- CHEM 282-2 Organic Chemistry II or CHEM 283-3
- CHEM 286-2 Organic Chemistry Laboratory II

one of:
- CMPT 102-3 Intro to Scientific Computer Program
- CMPT 110-3 Programming in Visual Basic
- CMPT 120-3 Intro to Computing Science & Program I
- CMPT 130-3 Intro to Computer Programming I

one of:
- MATH 150-4 Calculus I with Review
- MATH 151-3 Calculus I
- MATH 154-3 Calculus I for the Biological Sciences

one of:
- MATH 152-3 Calculus II
- MATH 155-3 Calculus II for the Biological Sciences

one of:
- PHYS 101-3 Physics for the Life Sciences I
- PHYS 120-3 Mechanics and Modern Physics
- PHYS 125-3 Mechanics and Special Relativity
- PHYS 140-4 Studio Physics – Mechanics and Modern Physics

one of:
- PHYS 102-3 Physics for the Life Sciences II
- PHYS 121-3 Optics, Electricity and Magnetism
- PHYS 126-3 Electricity, Magnetism and Light
- PHYS 141-4 Studio Physics – Optics, Electricity and Magnetism

one of:
- STAT 201-3 Statistics for the Life Sciences
- STAT 270-3 Intro to Probability & Statistics

**Note:** All students are subject to WQB requirements, with any lower division unit(s) as listed above.

---

### Upper Division Core

- MBB 308-3 Molecular Biology Lab
- MBB 309W-4 Biochemistry Lab
- MBB 321-3 Intermediary Metabolism
- MBB 322-3 Molecular Physiology
- MBB 331-3 Molecular Biology

A minimum of five courses from the following list:
- MBB 323-3 Introduction to Physical Biochemistry
- MBB 324-3 Protein Biochemistry
- MBB 342-3 Intro to Genomics & Bioinformatics
- MBB 402-3 Molecular and Developmental Genetics
- MBB 420-3 Selected Topics in Contemporary Biochemistry
- MBB 421-3 Nucleic Acids
- MBB 422-3 Biomembranes
- MBB 423-3 Protein Structure and Function
- MBB 424-3 Membrane Transport Mechanisms
- MBB 426-4 Immune System I
- MBB 427-3 Immune System II
- MBB 428-3 Molecular Mechanisms of Microbial Pathogenesis
- MBB 430-3 Mechanisms of Secretory Transport
- MBB 431-3 Cells and Disease
- MBB 432-3 Advanced Molecular Biology Techniques
- MBB 435-3 Genome Biology
- MBB 436-3 Gene Expression
- MBB 438-3 Human Molecular Genetics
- MBB 440-3 Selected Topics in Molecular Biology
- MBB 441-3 Bioinformatics
- MBB 442-3 Proteomics
- MBB 443-3 Protein Biogenesis and Degradation
- MBB 444-3 Developmental Neurobiology
- MBB 446-3 Cell Death and Cell Survival
- MBB 461-3 Comparative Genomics
- MBB 462-3 Human Genomics
- PHYS 433-3 Biological Physics Lab

---

### Minor Requirements:
All lower division core requirements (except for BISC 202, CHEM 215, STAT 201/270 and CMPT) plus any five upper division MBB courses.

### Honors Requirements:
In addition to fulfilling the MBB Major requirements, honors students must complete an individual Study Semester (ISS) over one (MBB 481-5/482-5/483-5 taken concurrently) or two semesters (MBB 491-5 and MBB 492-10). Honors students must also complete a total of 132 units. Of the 132 units, 60 must be upper division units (and includes the ISS).

**MBB Undergraduate Program Webpage:**