Biochemistry, Cellular and Molecular Biology, B.S.

**major**

Cellular and Molecular Emphasis

Required Credits: 75
Required GPA: 2.25

**I REQUIRED COURSES**

**BIOLOGY CORE**

Complete the following courses:
- BIOL 1400 Cellular Principles (4 credits)
- BIOL 2360 Genetics (4 credits)
- BIOL 3380 Molecular Genetics (3 credits)
- BIOL 3590 Cell Biology (3 credits)
- BIOL 3710 Microbiology (4 credits)

**CHEMISTRY CORE**

Complete the following courses:
- CHEM 2211 Principles of Chemistry I (4 credits)
- CHEM 2212 Principles of Chemistry II (4 credits)
- CHEM 3311 Organic Chemistry I (3 credits)
- CHEM 3312 Organic Chemistry II (3 credits)
- CHEM 3371 Organic Chemistry Laboratory I (1 credit)
- CHEM 3372 Organic Chemistry Laboratory II (1 credit)
- CHEM 4411 Biochemistry I (3 credits)
- CHEM 4412 Biochemistry II (3 credits)
- CHEM 4471 Biochemistry Laboratory I (1 credit)

**RELATED FIELD REQUIREMENTS**

Select one of the following groups:

**GROUP 1:**
- PHYS 1101 General Physics I (4 credits)
- PHYS 1102 General Physics II (4 credits)

**GROUP 2:**
- PHYS 2101 University Physics I (4 credits)
- PHYS 2102 University Physics II (4 credits)

**SEMINARS**

Complete the following courses:
- BCMB 1000 Biochemistry, Cell and Molecular Biology Careers (BCMB Careers) (1 credit)
- BCMB 3000 Biochemistry, Cell and Molecular Biology Research (BCMB Research) (1 credit)

**TECHNIQUES CORE**

Select one of the following:
- BCMB 3074 Molecular Techniques (2 credits)
- BIOL 3074 Molecular Techniques (2 credits)

Select one of the following:
- BCMB 3075 Cellular Techniques (2 credits)
- BIOL 3075 Cellular Techniques (2 credits)
- BCMB 4476 Techniques in Biotechnology and Biochemistry (2 credits)
- CHEM 4476 Techniques in Biotechnology and Biochemistry (2 credits)

**RESEARCH**

SELECT ONE OF THE FOLLOWING GROUPS:

**GROUP 1:**
- BIOL 4894 Advanced Research Project I (2 credits)
- BIOL 4895 Advanced Research Project II (2 credits)

**GROUP 2:**
- CHEM 4894 Research I (2 credits)
- CHEM 4895 Research II (2 credits)

**II REQUIRED EMPHASIS - CELLULAR AND MOLECULAR BIOLOGY**

**BIOLOGY ELECTIVES**

Select 3 courses:
- BIOL 3250 Human Anatomy (4 credits)
- BIOL 3260 Human Physiology (4 credits)
- BIOL 3300 Introduction to Hematology (4 credits)
- BIOL 3580 Immunology (3 credits)
- BIOL 4270 Histology (4 credits)
- BIOL 4360 Developmental and Tumor Biology (3 credits)
- BIOL 4447 Genomics (3 credits)
- BIOL 4460 Stem Cells and Regenerative Medicine (3 credits)
- BIOL 4470 Introduction to Vaccinology (4 credits)
- BIOL 4715 Clinical Microbiology (3 credits)

**CHEMISTRY ELECTIVES**

Select one of the following groups:

**GROUP 1:**
- CHEM 3507 Analytical Chemistry (3 credits)
- CHEM 3570 Analytical Chemistry Laboratory (1 credit)

**GROUP 2:**
- CHEM 4614 Medicinal Chemistry: Drug Design (3 credits)
- CHEM 4615 Medicinal Chemistry: Drug Action (3 credits)

**RELATED FIELD REQUIREMENTS**

Complete one of the following courses:
- MATH 2471 Calculus I (5 credits)
- STAT 2610 Applied Statistics (4 credits)

**Suggested Semester Schedule | Biochemistry, Cellular, and Molecular Biology, B.S.**

**Cellular and Molecular Biology emphasis**

**Freshman:**
- BIOL 1400 Cellular Principles (4 credits)
• CHEM 2211 Principles of Chemistry I (4 credits)
• BIOL 2360 Genetics (4 credits)
• CHEM 2212 Principles of Chemistry II (4 credits)
• BCMB 1000 Biochemistry, Cell and Molecular Biology Careers (BCMB Careers) (1 credit)

Sophomore:

• BIOL 3590 Cell Biology (3 credits)
• CHEM 3311 Organic Chemistry I (3 credits)
• PHYS 1101 General Physics I (4 credits)
or PHYS 2101 University Physics I (4 credits)
• BIOL 3380 Molecular Genetics (3 credits)
• CHEM 3312 Organic Chemistry II (3 credits)
• BCMB 3074 Molecular Techniques (2 credits)
or BIOL 3074 Molecular Techniques (2 credits)
• PHYS 1102 General Physics II (4 credits)
or PHYS 2102 University Physics II (4 credits)

Junior:

• BIOL 3710 Microbiology (4 credits)
• CHEM 4411 Biochemistry I (3 credits)
• BCMB 3075 Cellular Techniques (2 credits)
or BIOL 3075 Cellular Techniques (2 credits)
• CHEM 4412 Biochemistry II (3 credits)
• BCMB 3000 Biochemistry, Cell and Molecular Biology Research (BCMB Research) (1 credit)
• STAT 2610 Applied Statistics (4 credits)
or MATH 2471 Calculus I (5 credits)
• Emphasis Biology elective

Senior:

• BIOL 4894 Advanced Research Project I (2 credits)
• BIOL 4895 Advanced Research Project II (2 credits)
• Emphasis Chemistry elective(s)
• Emphasis Biology electives