



# Biochemistry, Cellular and Molecular Biology, B.S.

major

## Biochemistry Emphasis

Required Credits: 80

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)  
or 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 - BIOCHEMISTRY

#### CHEMISTRY

Complete the following courses:

- CHEM 3507 Analytical Chemistry (3 credits)
- CHEM 3570 Analytical Chemistry Laboratory (1 credit)
- CHEM 4614 Medicinal Chemistry: Drug Design (3 credits)
- CHEM 4615 Medicinal Chemistry: Drug Action (3 credits)

#### CHEMISTRY ELECTIVES

Select one of the following groups:

##### GROUP 1:

- CHEM 4510 Instrumental Methods of Analysis (3 credits)
- CHEM 4571 Instrumental Analysis Laboratory I (1 credit)

##### GROUP 2:

- CHEM 4711 Physical Chemistry I (3 credits)
- CHEM 4771 Physical Chemistry Laboratory I (1 credit)

##### GROUP 3:

- CHEM 3811 Intermediate Inorganic Chemistry (3 credits)
- CHEM 4871 Inorganic Chemistry Laboratory I (1 credit)

#### BIOLOGY ELECTIVES

Select one of the following:

- 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)

#### 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.**

#### **Biochemistry 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)
- MATH 2471 Calculus I (5 credits)  
or STAT 2610 Applied Statistics (4 credits)

Sophomore:

- BIOL 3590 Cell Biology (3 credits)
- CHEM 3311 Organic Chemistry I (3 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)
- CHEM 3507 Analytical Chemistry (3 credits)

Junior:

- BIOL 3710 Microbiology (4 credits)
- CHEM 4411 Biochemistry I (3 credits)
- PHYS 2101 University Physics I (4 credits)
- CHEM 4412 Biochemistry II (3 credits)
- BCMB 3000 Biochemistry, Cell and Molecular Biology Research (BCMB Research) (1 credit)
- BCMB 4476 Techniques in Biotechnology and Biochemistry (2 credits)  
or CHEM 4476 Techniques in Biotechnology and Biochemistry (2 credits)
- PHYS 2102 University Physics II (4 credits)

Senior:

- CHEM 4894 Research I (2 credits)
- CHEM 4895 Research II (2 credits)
- CHEM 4614 Medicinal Chemistry: Drug Design (3 credits)
- CHEM 4615 Medicinal Chemistry: Drug Action (3 credits)
- Emphasis Chemistry elective(s)
- Emphasis Biology elective