

# B.S. REQUIREMENTS FOR BIOCHEMISTRY

To declare the B.S. in Biochemistry, students must have completed at least 30 credits in graded coursework at Syracuse University AND earn a C+ or better in Organic Chemistry I (CHE 275) AND earn a C+ or better in Genetics (BIO 326) or Cell Biology (BIO 327).

## 1. Core Courses (48-60 credits):

- ☐ BIO 121: General Biology (4)
- ☐ BIO 305: Integrative Biology Laboratory (3)
- ☐ CHE 106/107: General Chemistry Lecture/Lab  
**OR** CHE 109/129: General Chemistry Lecture/Lab (Majors/Honors) (4)
- ☐ CHE 116/117: General Chemistry Lecture/Lab II  
**OR** CHE 119/139: General Chemistry Lecture/Lab II (Majors/Honors) (4)
- ☐ CHE 275/276: Organic Chemistry Lecture/Lab (5)
- ☐ CHE 325/326: Organic Chemistry Lecture/Lab II (5)
- ☐ MAT 285: Life Sciences Calculus I (3)  
**OR** MAT 295: Calculus I (4)
- ☐ MAT 286: Life Sciences Calculus II (3)  
**OR** MAT 296: Calculus II (2-4)
- ☐ PHY 211/221: General Physics Lecture/Lab (4)
- ☐ PHY 212/222: General Physics Lecture/Lab II (4)
- ☐ BIO 326: Genetics
- ☐ BIO 327: Cell Biology
- ☐ CHE 474: Structural & Physical Biochemistry (3)
- ☐ BIO 475: Biochemistry Laboratory (4)  
**OR** BCM 477: Proteins and Nucleic Acids Lab (3)
- ☐ BCM 475: Biochemistry I
- ☐ BCM 476: Biochemistry II

## 2. Elective Courses (at least 12 credits, including at least one structural lab indicated with an asterisk):

- ☐ CHE 335: Chemical and Biochemical Analysis Lab\* (4)
- ☐ CHE 346: Physical Chemistry (3)
- ☐ CHE 356: Physical Chemistry II (3)
- ☐ BIO 409: Microbiology\* (4)
- ☐ CHE 412: Metals in Medicine (3)
- ☐ BIO 422: Bioinformatics for Life Sciences w/ Lab\* (3)
- ☐ BIO 471: Cell and Development Biology Lab\* (3)
- ☐ CHE 427: Organic Chemistry of Biological Molecules (3)
- ☐ BCM 430: Journal Club in Molecular Pharmacology & Structural Biology (1)
- ☐ BIO 447: Immunology (3)
- ☐ BCM 460: Research in Biochemistry (1-3)
- ☐ BIO 462: Molecular Genetics (3)
- ☐ BIO 463: Molecular Biotechnology Lab\* (4)
- ☐ BIO 464: Applied Biotechnology Lab\* (4)
- ☐ BIO 465: Molecular Biology Lab\* (3)
- ☐ BCM 484: Biomolecular Modeling w/ Lab\* (3)
- ☐ BIO 501: Biology of Cancer (3)
- ☐ BIO 503: Developmental Biology (3)
- ☐ CHE 546: Molecular Spectroscopy and Structure (1-9)
- ☐ CHE 575: Organic Spectroscopy (3)

If both BIO 475 and CHE/BCM 477 are taken, one may count toward the 12-credit elective requirement, thereby also meeting the instructional lab requirement.

BCM 460 counts once (up to 3 credits) toward elective requirement, but does not count as an instructional lab course.

## Recommended Electives:

### Preparation for Graduate School in a Department of Biology, Biochemistry, or Molecular Biology

BIO 409: Microbiology\* (4)  
CHE 412: Metals in Medicine (3)  
CHE 427: Organic Chemistry of Biological Molecules (3)  
BCM 430: Journal Club in Molecular Pharmacology & Structural Biology (1)  
BIO 447: Immunology (3)  
BCM 460: Research in Biochemistry (1-3)  
BIO 462: Molecular Genetics (3)  
BIO 463: Molecular Biotechnology Lab\* (4)  
BIO 464: Applied Biotechnology Lab\* (4)  
BIO 465: Molecular Biology Lab\* (3)  
BCM 484: Biomolecular Modeling w/ Lab\* (3)  
BIO 501: Biology of Cancer (3)  
BIO 503: Developmental Biology (3)

### Preparation for Graduate School in a Dept. of Chemistry

CHE 335: Chemical and Biochemical Analysis Lab\* (4)  
CHE 346: Physical Chemistry (3)  
CHE 356: Physical Chemistry II (3)  
CHE 412: Metals in Medicine (3)  
CHE 427: Organic Chemistry of Biological Molecules (3)  
BCM 430: Journal Club in Molecular Pharmacology & Structural Biology (1)  
BIO 465: Molecular Biology Lab\* (3)  
BCM 484: Biomolecular Modeling w/ Lab\* (3)  
CHE 546: Molecular Spectroscopy and Structure (1-9)  
CHE 575: Organic Spectroscopy (3)  
BCM 460: Research in Biochemistry (1-3)

### Preparation for Health Professions (M.D., D.D.S., D.V.M.)

BIO 409: Microbiology\* (4)  
CHE 412: Metals in Medicine (3)  
BIO 447: Immunology (3)  
BCM 460: Research in Biochemistry (1-3)  
BIO 462: Molecular Genetics (3)  
BIO 465: Molecular Biology Lab\* (3)  
BIO 501: Biology of Cancer (3)  
BIO 503: Developmental Biology (3)

### Preparation for Technical Careers in Pharmaceutical or Biotechnical Industry

CHE 335: Chemical and Biochemical Analysis Lab\* (4)  
BIO 409: Microbiology\* (4)  
CHE 412: Metals in Medicine (3)  
CHE 427: Organic Chemistry of Biological Molecules (3)  
BCM 430: Journal Club in Molecular Pharmacology & Structural Biology (1)  
BIO 447: Immunology (3)  
BCM 460: Research in Biochemistry (1-3)  
BIO 462: Molecular Genetics (3)  
BIO 463: Molecular Biotechnology Lab\* (4)  
BIO 464: Applied Biotechnology Lab\* (4)  
BIO 465: Molecular Biology Lab\* (3)  
BCM 484: Biomolecular Modeling w/ Lab\* (3)  
BIO 501: Biology of Cancer (3)  
BIO 503: Developmental Biology (3)  
CHE 575: Organic Spectroscopy (3)