BIOCHEMISTRY AND MOLECULAR BIOLOGY

THE PROGRAM ADVISORS

Susan L. Blauth, Biology
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THE PROGRAM

The major in Biochemistry and Molecular Biology is an interdisciplinary major at the interface of biology and chemistry designed to prepare students for careers in biochemistry and molecular biology, and in the related fields of cell biology, microbiology, molecular genetics, or in the health sciences.

Students who intend to major in Biochemistry and Molecular Biology must file an "intent to major" form with the secretary of the departments of Biology and Chemistry at the time they declare their major. This form must be signed by the student and a program advisor

Learning outcomes for this program may be found at www.redlands.edu/BS-BIOC/learningoutcomes.

BACHELOR OF SCIENCE

DEGREE REQUIREMENTS

Students planning to continue their education in graduate or professional school are strongly advised to look at graduate or professional school requirements at universities to which they may apply as they may require specific upper-level courses.

BIOLOGY COURSES: 4 courses / 15-16 credits
–– BIOL 200 Principles of Biology: Unity and Diversity (4)
–– BIOL 201 Principles of Biology II: Molecular/Cellular Biology and Genetics (4)
–– BIOL 239 Molecular Genetics and Heredity (4)
–– BIOL 325 Medical Genetics (3-4) **OR** BIOL 326 Neuroscience **OR** BIOL 332 Nutrition (4) **OR** BIOL 343 Microbiology (4) **OR** BIOL 345 Immunology (4) **OR** BIOL 348 Developmental Biology (4) **OR** the third course from the Biochemistry and Molecular Biology Advanced Core

CHEMISTRY COURSES: 7 courses / 28 credits
–– CHEM 131 General Chemistry (4)
–– CHEM 132 General Chemistry (4)
–– CHEM 231 Organic Chemistry (4)
–– CHEM 232 Organic Chemistry (4)
–– CHEM 320 Biochemistry (4)
––CHEM 330 Analytical Chemistry (4) **OR** CHEM 331 Physical Chemistry (4)
–– CHEM 332 Physical Chemistry (4)

ADVANCED BIOCHEMISTRY AND MOLECULAR BIOLOGY COURSES: 2 courses/8 credits
Choose two of the following courses:

CHEM 420 Advanced Biochemistry (4)
BIOL 338 Cell Biology (4)
BIOL 342 Advanced Genetics and Genomics (4)

CAPSTONE RESEARCH AND SEMINAR 8-12 CREDITS
Choose one of the following groups:
−− 6 credits of BIOL 499 Honors Research (2–4) or 6 credits selected from one of the biology research courses (BIOL 403 to 460)
−− BIOL 394 Biology Seminar (0)
−− BIOL 495 Senior Seminar (1)
−− BIOL 496 Senior Seminar (1)
OR
−− 3 credits of CHEM 378 Chemistry Research (1–4) (depending on chemistry degree track)
−− 1 credit of CHEM 478 Senior Research and Thesis (1)
−− Three semesters of CHEM 394 Chemistry Seminar (1)
−− One semester of CHEM 494 Communication in Chemistry (3)
OR
−− 6 credits of BLCM 460 Advanced Interdisciplinary Research in Biology and Chemistry (1–3)
−− BIOL 394 (0) or BIOL 495–BIOL 496 (1) or three semesters of CHEM 394 (1) and one semester of CHEM 494 (3)

Note: Research topics must be approved by the departments of Biology and Chemistry.

RELATED FIELD REQUIREMENTS

MATHEMATICS:
Choose one of the following groups:
−− MATH 121 Calculus I (4)
−− MATH 122 Calculus II (4)
OR
−− MATH 118 Integrated Calculus I (4)
−− MATH 119 Integrated Calculus II (4)
−− MATH 122 Calculus II (4)

PHYSICS:
Choose one of the following groups:
−− PHYS 220 Fundamentals of Physics I (4)
−− PHYS 221 Fundamentals of Physics II (4)
OR
−− PHYS 231 General Physics I (4)
−− PHYS 232 General Physics II (4)

COURSE DESCRIPTIONS (BLCM)

360 Interdisciplinary Research in Biology and Chemistry.
Fall (1–3), Spring (1–3).

Experimental study of project from both a biological and chemical perspective. Three hours laboratory, 80 minutes discussion, three hours independent work. May be repeated for degree credit for a maximum of 9 credits.
Prerequisite: by permission.
Offered as needed.
Numeric grade only.

460 Advanced Interdisciplinary Research in Biology and Chemistry.
Fall (1–3), Spring (1–3).
Continuation of experimental study of project from both a biological and chemical perspective. Includes serving as a mentor for student researchers and writing a grant proposal or thesis. Three hours laboratory, 80 minutes discussion, three hours independent work. May be repeated for degree credit for a maximum of 9 credits.
Prerequisite: by permission.
Offered as needed.
Numeric grade only.