

B.S. Biochemistry

2023-24

WEBSITE

<https://www.swau.edu/mathphy>

DEPARTMENT PERSONNEL

Chair

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The Bachelor of Science in Biochemistry is one of four exciting Chemistry programs offered by Southwestern Adventist University's Department of Mathematics and Physical Sciences. The other programs are the Bachelor of Arts in Chemistry, the Bachelor of Science in Chemistry, and Bachelor of Science in Physical Science -Secondary Teacher Certification with concentration in Chemistry. The aim of the chemistry program is to develop in students the ability to think critically and creatively. The chemistry curriculum is designed to provide the student with a strong background in the areas of organic chemistry, biochemistry, analytical chemistry, and physical chemistry. The major will serve as a solid foundation upon which the candidate can build a professional career or a more specialized graduate program.

Job Market

Most of Southwestern Adventist University's Chemistry graduates have chosen to pursue careers in medicine, pharmacy, dentistry or clinical laboratory science. There are many other career options for chemistry majors. These include graduate school, entry level positions in academia, industry, analytical labs, pharmaceutical labs, the government and the chemical industry. National interest in STEM (Science, Technology, Engineering and Mathematics) disciplines have highlighted the need for graduates trained in these areas, at all academic levels and as a matter of highest national significance.

Job Outlook

The Bureau of Labor Statistics reports that: "Employment of chemists and materials scientists is expected to increase by "6 percent from 2021-2031, about as fast as the average for all occupations". Chemists and materials scientists with an advanced degree, particularly those with a Ph.D., are expected to experience better opportunities."

Earnings

Earning potential is also affected by geographic location and by whether one pursues a career in industry, academia, or in a government-related organization. The expected median annual income for an individual with a BA or BS degree is about \$79 760. (BLS, 2021)

Bachelor's degree candidates are generally qualified for entry-level positions in most career fields. Getting a graduate or professional degree will significantly increase the earning potential of the holder of a first degree.

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Required Courses

Item #	Title	Credits
BIOL 111	General Biology I	4
BIOL 112	General Biology II	4
BIOL 340	Cell and Molecular Biology I	4
	Biochemistry Electives	3-4
CHEM 111	General Chemistry I	4
CHEM 112	General Chemistry II	4
CHEM 201	Research Methods in the Physical Sciences	1
CHEM 221	Modern Analytical Chemistry	4
CHEM 231	Organic Chemistry I	4
CHEM 232	Organic Chemistry II	4
CHEM 341	Physical Chemistry I	4
CHEM 421	Modern Analytical Instrumentation	4
CHEM 431	Biochemistry I	3
CHEM 432	Biochemistry I Lab	1
CHEM 433	Biochemistry II	3
CHEM 434	Biochemistry II Lab	1
CHEM 475	Research Methods in Chemistry	4
	Sub-Total Credits	56-57

Required Cognates

Item #	Title	Credits
MATH 181	Calculus I	4
MATH 182	Calculus II	4
	MATH 283 or MATH 321	3-4
PHYS 121	General Physics I	4
PHYS 122	General Physics II	4
	Sub-Total Credits	19-20

Recommended Cognates

Item #	Title	Credits
PHYS 221	General Physics with Calculus I	1
PHYS 222	General Physics with Calculus II	1
RELT 419	Philosophy of Science	3
	Sub-Total Credits	5

Sample 4 Year Curriculum

General Education Requirements

To view general education requirements for this major please visit: <https://catalog.swau.edu/core-curriculum-for-a-bachelors-degree>

First Year First Semester

Item #	Title	Credits
BIOL 111	General Biology I	4
CHEM 111	General Chemistry I	4
ENGL 121	Freshman Composition	3
MATH 180	Precalculus	4
UNIV 111	Wellness for Life	2
	Sub-Total Credits	17

First Year Second Semester

Item #	Title	Credits
BIOL 112	General Biology II	4
CHEM 112	General Chemistry II	4
COMM 111	Speech	3
	Religion GE Requirement	3
	Kinesiology GE Requirement	1
	Sub-Total Credits	15

Second Year First Semester

Item #	Title	Credits
CHEM 221	Modern Analytical Chemistry	4
CHEM 231	Organic Chemistry I	4
ENGL 220	Research Writing	3
PHYS 121	General Physics I	4
	Sub-Total Credits	15

Second Year Second Semester

Item #	Title	Credits
CHEM 232	Organic Chemistry II	4
CHEM 201	Research Methods in the Physical Sciences	1
MATH 181	Calculus I	4
PHYS 122	General Physics II	4
	History GE Requirement	3
	Sub-Total Credits	16

Third Year First Semester

Item #	Title	Credits
CHEM 431	Biochemistry I	3
CHEM 432	Biochemistry I Lab	1
MATH 182	Calculus II	4
	Biochemistry Electives	3-4
	Religion GE Requirement	3
	Sub-Total Credits	14-15

Third Year Second Semester

Item #	Title	Credits
CHEM 433	Biochemistry II	3
CHEM 434	Biochemistry II Lab	1
CHEM 421	Modern Analytical Instrumentation	4
MATH 283	Calculus III	4
	Literature GE Requirement	3
	Sub-Total Credits	15

Fourth Year First Semester

Item #	Title	Credits
CHEM 341	Physical Chemistry I	4
	Fine Arts GE Requirement	3
	History GE Requirement	3
	Literature GE Requirement	3
	Religion GE Requirement	3
	Sub-Total Credits	16

Fourth Year Second Semester

Item #	Title	Credits
	BIOL Upper Division Electives (x3-4)	12
CHEM 475	Research Methods in Chemistry	4
	Religion GE Requirement	3
	Social Science GE Curriculum Guide	3
	Sub-Total Credits	22

June 2023

Southwestern Adventist University—Office of Academic Administration