Augustana College

Biochemistry

Courses required for the first year: CHEM-131 and CHEM-132 or CHEM-235
Courses recommended for the first year: MATH-160, MATH-220, or MATH-230 depending on math placement
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The Major in Biochemistry

MAJOR IN BIOCHEMISTRY. 28 credits in CHEM beyond CHEM-132/CHEM-235, including CHEM-255, CHEM-322, CHEM-361, CHEM-441, CHEM-442, and one Senior Inquiry chosen from CHEM-474, CHEM-475 or CHEM-476. 12 credits in BIOL, including BIOL-130, BIOL-250, and one biology elective. Required supporting courses: PHYS-151/PHYS-152 or PHYS-211/PHYS-212 and MATH-160, MATH-220, and MATH-230. Recommended supporting courses: CHEM-365, CHEM-455, CHEM-435, COMP-211 and COMP-212.

Biology Electives for BCHM Major

BIOL-343 Microbiology
BIOL-360 Comparative Physiology
BIOL-362 Human Physiology
BIOL-373 Developmental Biology
BIOL-375 Molecular Biology
BIOL-392 Cancer Biology
BIOL-348 Cell signaling and Regulation
BIOL-371 Introduction to Bimolecular Research

Required Courses

Course Number	Course Name	Learning Perspective	Prerequisites	Credits
CHEM-131*	General Chemistry I	PN	None	4
CHEM-132*	General Chemistry II	PN	CHEM-131 or CHEM-235	4
CHEM-235*	Introduction to Inorganic Chemistry	PN	Two years high school chemistry or instructor permission	4
CHEM-255	Quantitative Analysis		CHEM-132 or CHEM-235	4
CHEM-321	Organic Chemistry I		CHEM-132 or CHEM-235	4
CHEM-322	Organic Chemistry II		CHEM-321	4
CHEM-361	Physical Chemistry I		CHEM-131 or CHEM-235, PHYS-152 or PHYS-212,	4

			MATH-220 and MATH-230	
CHEM-441	Biochemistry I		CHEM-322 and BIOL-130 4 CHEM-442 Biochemistry II CHEM	4
CHEM-471	Inquiry in Chemistry		CHEM-322	2
CHEM-474, CHEM-475, or CHEM-476	Senior Inquiry		CHEM-471**	2

*Placement in first-year chemistry courses depends on previous preparation. See below for more details.
**May be taken as a co-requisite

Additional Courses (or Required Supporting Courses)

Course Number	Course Name	Learning Perspective	Prerequisites	Credits
MATH-160	Calculus		Math placement or MATH-140	4
MATH-220 & MATH-230	Integration Methods and Infinite Series		MATH-160	2+2
PHYS-151 or PHYS-211	Principles of Physics I or Foundational Physics I	PN	PHYS-211 requires MATH-160	4
PHYS-152 or PHYS-212	Principles of Physics II or Foundational Physics II	PN	PHYS-212 requires MATH-220 (prerequisite) MATH-260 (co-requisite)	4
BIOL-130	Molecules to Cells			4
BIOL-250	Genetics		BIOL-130 and BIOL-140	4
BIOL Elective	See list above			4

Major Overview

Biochemistry is ideal for the student interested in the chemistry of living things and the close examination of the molecules that carry out such functions as metabolism, movement, and gene expression. A degree in biochemistry prepares a student for many fields beyond biochemistry or biomedical sciences, as it is the core basis for many more applied fields such as biotechnology, molecular genetics, immunology, pharmacology, toxicology and forensic science. A biochemistry major is ideal preparation for graduate study in such applied fields. The degree is also appropriate for students interested in health professions (i.e. medicine, dentistry), as well as students interested in the biotechnology and pharmaceutical industries. A biochemistry background could also be useful for students interested in business, law, regulation, journalism or technical writing related to the molecular life sciences. The biochemistry major includes courses in chemistry, biology, mathematics and physics.

A note on selecting first-year chemistry courses:

Students with a strong high school chemistry background (i.e. two years of chemistry, AP chemistry) and who are considering majoring in chemistry or biochemistry should take CHEM-235 since this will put them on track to take Organic Chemistry I (CHEM-321) or Quantitative Analysis (CHEM-255) during spring semester of their first year.

Students seeking to complete a year of general chemistry for professional school have several options:

1. Students with a typical high school science background (one year of chemistry) should plan to complete CHEM-131 and CHEM-132 (General Chemistry I and II).
2. Students who have earned AP scores of 4 or 5 in chemistry can receive credit for CHEM-132. In order to complete a year of general chemistry (required by many professional schools) they should take CHEM-131 or CHEM-235 (Introductory Inorganic Chemistry; preferred).
3. There will be one section of CHEM-131 offered each spring semester and CHEM-132 offered each fall semester (starting fall 2020) to accommodate student scheduling needs and provide flexibility.

Updated April 2025