

# CHEMISTRY & BIOCHEMISTRY

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Halenz Hall, Room

- - or -

[chemistry@andrews.edu](mailto:chemistry@andrews.edu)

[www.andrews.edu/chem/](http://www.andrews.edu/chem/)

## Faculty

D. David Nowack, Chair

Lisa Ahlberg

Ryan Hayes

Getahun Merga

Desmond H. Murray

David W. Randall

## American Chemical Society Certification

Students desiring American Chemical Society certification must

✓ & R P S O W W H I T X E B X G I V R N W K \$ I & % D F O K R U

Science degree in chemistry or biochemistry as spelled out in this bulletin

✓ \$ F K L I D F H Q L P X 3 R U x l x D F C H P L F R X U U W B M H Q  
at Andrews University

✓ 6 D W L V I D F R V P S O D H O W M H B U R R S M I L N G X F D W L R Q D O  
experience in chemistry

✓ 3 D V I R E K H P L D W H I R Q M G Y D C F R X G V H I O H I F U R I P G  
the following: CHEM , or .

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Academic Programs	Credits
BS: Chemistry	
BS: Chemistry (Approved by the American Chemical Society (ACS) Committee on Professional Training)	
BS: Biochemistry (Approved by the American Chemical Society (ACS) Committee on Professional Training)	
BS: Biochemistry	
Minor in Chemistry	

## Mission

The mission of the Department of Chemistry & Biochemistry within the context of a Seventh-day Adventist Christian worldview is to assist all students to excel in developing their analytical and critical reasoning skills, using fundamental chemical principles and computational methods; prepare our chemistry and biochemistry majors to enter graduate school, professional school, the chemical industry, or the teaching profession, in a diverse world; develop in our students an understanding of responsible, environmentally sensitive use of global resources; engage students and faculty in the process of discovery and creativity in the research lab and the classroom to model a life of personal and professional integrity.

Students who plan to major in chemistry or biochemistry are expected to have entrance credit in the preparatory subjects of chemistry and mathematics (including algebra and trigonometry); a background in physics is desirable. Those who do not have entrance credit or equivalent training in these subjects, particularly mathematics, may not fulfill the department graduation requirements in four years.

Students are encouraged to plan early for an on-campus or off-campus research experience required of all students in the Bachelor of Science degree programs in chemistry and biochemistry (ACS) and strongly recommended for those in the Bachelor of Science degree program in biochemistry. This experience may take the form of a cooperative educational-research experience or research in an academic, industrial, or governmental laboratory setting. Interested students should consult the department chair.





CHEM t ( )  
Physical Chemistry I  
Fundamental concepts in chemical thermodynamics, free energy, chemical equilibria, phase changes, solutions, molecular transport, chemical dynamics, and electrochemistry. Weekly: lectures. Prerequisites: CHEM , MATH , PHYS (or , ). Fall

CHEM t ( )  
Physical Chemistry II  
Wave mechanics, atomic and molecular structure, chemical bonding, atomic and molecular spectroscopies, and applications to chemical dynamics and statistical thermodynamics. Weekly: lectures. Prerequisites: CHEM , MATH ; MATH strongly recommended. Spring

CHEM t \$ ( )  
Instrumental Analysis  
Theory and practice of analytical separations and chemical analyses by chromatographic, optical, and electrochemical methods. Introduction to interface of instruments with microcomputers. Instruments used include emission and absorption spectrometers, lasers, mass spectrometer, chromatographs, microcomputers, analog and digital devices. Weekly: lectures and two -hour labs. Prerequisites: CHEM , MATH . Fall

CHEM t \$ ( )  
Physical Chemistry Laboratory I  
Experiments related to the course content of CHEM . Weekly: one -hour laboratory. Prerequisite: concurrent enrollment in CHEM . Fall

CHEM t \$ ( )  
Physical Chemistry Laboratory II  
Experiments related to the course content of CHEM . Weekly: one -hour laboratory. Prerequisite: concurrent enrollment in CHEM . Spring

CHEM t \$ ( )  
Modern Synthetic Techniques  
An advanced laboratory course designed to incorporate a wide variety of modern synthetic techniques of organic, organometallic, and inorganic chemistry. Weekly: two -hour labs. Prerequisites: CHEM , or concurrent enrollment in CHEM . Spring

CHEM ( )  
Advanced Organic Chemistry

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