

# Chemistry

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Chemistry. It's the core science: the study of the properties, composition and changes that occur in matter. When you study chemistry, you analyze issues that influence every aspect of life on Earth.

Whether you choose the bachelor of science degree (for those targeting careers in industry or planning to pursue a graduate degree) or the bachelor of arts degree (appropriate for those seeking work in medicine, dentistry or secondary school teaching), Cal Lutheran's chemistry curriculum provides the knowledge base required of the discipline.

Because of the program's strong emphasis on laboratory experience, our advanced chemistry students are taught how to design and carry out their own experiments and encouraged to work on independent research projects. They also have the opportunity to do supported research with faculty members during the summer. Many students have been accepted to summer research programs at Ph.D.-granting institutions.

The department possesses modern instruments which students use regularly in their classes and research projects. These include:

- Fourier transform infrared and nuclear magnetic resonance spectrometers
- gas chromatographs with several types of detectors
  - mass spectrometer
  - electron capture
  - flame ionization
- rapid-scan UV-vis spectrometer

Cal Lutheran chemistry students are encouraged to pursue internships and REU programs during the course of their studies. Recent Cal Lutheran students have interned at Ventura County Crime Lab, Amgen and Rockwell Science Center, and have attended REU programs at Colorado State and SUNY Stonybrook.

These undergraduate research opportunities translate into success for Cal Lutheran's chemistry graduates, who have been accepted into many of the nation's most respected medical, dental, and graduate programs including:

- University of California at
  - San Diego
  - Irvine
  - Santa Barbara
- Yale University
- Indiana University
- University of Ohio

## Bachelor of Arts in Chemistry

32 credits minimum, 20 credits upper division

CHEM 151	General Chemistry	4
CHEM 151L	General Chemistry Lab	1
CHEM 152	General Chemistry II	4
CHEM 152L	General Chemistry II Lab	1
CHEM 305/305L	Quantitative Analysis and Quantitative Analysis Lab	4
CHEM 331	Organic Chemistry	4
CHEM 332	Organic Chemistry II	4
CHEM 341	Organic Chemistry Lab	1
CHEM 342	Organic Chemistry II Lab	1
CHEM 485	Capstone Seminar	2
Chemistry Elective Credits (at least 4 Upper Division)		6
Total Hours		32

## Required Supporting Courses

Select one of the following:

8-10

PHYS 201/201L/202/202L	Mechanics and Thermodynamics-Algebra and Mechanics and Thermodynamics-Algebra Lab and Electricity, Magnetism, and Optics - Algebra and Electricity, Magnetism, and Optics - Algebra Lab
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PHYS 211/211L/212/212L	Mechanics and Thermodynamics-Calculus and Mechanics and Thermodynamics-Calculus Lab and Electricity, Magnetism, and Optics - Calculus and Electricity, Magnetism, and Optics - Calculus Lab	
MATH 251	Calculus I	4
Total Hours		12-14

## Recommended

MATH 252	Calculus II	4
Total Hours		4

## Bachelor of Science in Chemistry

40 Credits minimum, 28 credits upper division

CHEM 151	General Chemistry	4
CHEM 151L	General Chemistry Lab	1
CHEM 152	General Chemistry II	4
CHEM 152L	General Chemistry II Lab	1
CHEM 305/305L	Quantitative Analysis and Quantitative Analysis Lab	4
CHEM 306/306L	Chemical Instrumentation and Chemical Instrumentation Lab	4
CHEM 331	Organic Chemistry	4
CHEM 332	Organic Chemistry II	4
CHEM 341	Organic Chemistry Lab	1
CHEM 342	Organic Chemistry II Lab	1
CHEM 405/405L	Physical Chemistry and Physical Chemistry Lab	4
CHEM 406/406L	Physical Chemistry and Physical Chemistry Lab	4
CHEM 485	Capstone Seminar	2
Chemistry Elective Credits		2
Total Hours		40

## Required Supporting Courses

MATH 251	Calculus I	4
MATH 252	Calculus II	4
Select one of the following:		8-10
PHYS 201/201L/202/202L	Mechanics and Thermodynamics-Algebra and Mechanics and Thermodynamics-Algebra Lab and Electricity, Magnetism, and Optics - Algebra and Electricity, Magnetism, and Optics - Algebra Lab	
PHYS 211/211L/212/212L	Mechanics and Thermodynamics-Calculus and Mechanics and Thermodynamics-Calculus Lab and Electricity, Magnetism, and Optics - Calculus and Electricity, Magnetism, and Optics - Calculus Lab	
Total Hours		16-18

## Recommended

CHEM 411	Advanced Inorganic Chemistry	3
MATH 261	Calculus III	4
MATH 265	Differential Equations	4
Total Hours		11

## Minor in Chemistry

CHEM 151	General Chemistry	4
CHEM 151L	General Chemistry Lab	1
CHEM 152	General Chemistry II	4
CHEM 152L	General Chemistry II Lab	1
Select three courses from chemistry <sup>1</sup>		12
Total Hours		22

- <sup>1</sup> Taken in at least two areas of chemistry (200 level or above). CHEM 425 cannot be used to fulfill the minor if it is also being used to fulfill a major requirement.