

CHEMISTRY / BACHELOR OF SCIENCE

Total Credit Hours: 120-128

Major Credit Hours: 75-79

This program follows the recommendations of the American Chemical Society and is intended for students who plan to go to graduate school or enter industry.

A grade "C-" or better must be earned in a prerequisite course in order to advance to the next course in the sequence.

A chemistry course may be taken only twice at Lewis University. If a student has not achieved a minimum of "C-" after the second attempt, the student may not repeat the class at Lewis.

Chemistry majors may not double major in Biochemistry or minor in Biochemistry.

Chemistry majors with a concentration in Chemical Physics may not double major or minor in Physics.

Requirements

Degree Requirements

Code	Title	Hours
Core Courses		
CHEM 11000	General Chemistry 1	4
CHEM 11100	General Chemistry 1 Lab	1
CHEM 11500	General Chemistry 2	4
CHEM 11600	General Chemistry 2 Lab	1
CHEM 23000	Organic Chemistry I	3
CHEM 23200	Fundamental Spectroscopy	2
CHEM 23500	Organic Chemistry 2	3
CHEM 23600	Organic Chemistry Lab for Chemistry/Biochemistry Majors	2
CHEM 24200	Introduction to Solid State Chemistry	2
CHEM 29600	Research Methods Seminar	1
CHEM 39700	Chemistry/Biochemistry Seminar	1
MATH 20900	Calculus 1	4
MATH 23500	Calculus 2	4
MATH 25000	Calculus 3	4
PHYS 21000	General Physics 1	3
PHYS 21100	General Physics 1 Lab	1
PHYS 21500	General Physics 2	3
PHYS 21600	General Physics 2 Lab	1
PHYS 21800	General Physics 3	3
PHYS 21900	General Physics 3 Lab	1
Concentration		
Select one of the following:		27-31
No Declared Concentration (p. 1)		
Forensic Chemistry Concentration (p. 2)		
Chemical Physics Concentration (p. 2)		

Chemical Microscopy (p. 2)

Total Hours 75-79

No Declared Concentration

Code	Title	Hours
CHEM 30000	Physical Chemistry I	3
CHEM 30100	Physical Chemistry I Lab	1
CHEM 30500	Physical Chemistry 2	3
CHEM 30600	Physical Chemistry 2 Lab	1
CHEM 32000	Analytical Chemistry	3
CHEM 33200	Advanced Instrumental Analysis	2
CHEM 40000	Advanced Inorganic Chemistry	3
CHEM 40500	Biochemistry I	3
CHEM 40600	Biochemistry I Lab	1
CHEM 46500	Capstone Project	1
Select at least 6 credit hours from the following:		6
CHEM 34000	Environmental Chemistry I	
CHEM 34100	Environmental Chemistry I Lab	
CHEM 34200	Environmental Chemistry II	
CHEM 34300	Environmental Chemistry II Lab	
CHEM 40100	Advanced Organic Chemistry	
CHEM 40200	Topics in Organic Chemistry	
CHEM 40300	Nuclear Chemistry	
CHEM 40400	Radiochemistry	
CHEM 40700	Biochemistry 2	
CHEM 40800	Biochemistry 2 Lab	
CHEM 41500	Advanced Forensic Chemistry I	
CHEM 41600	Advanced Forensic Chemistry II	
CHEM 45000	Research	
CHEM 47000	Internship	
CHEM 49800	Special Topics	
CHEM 50100	Chemical Thermodynamics	
CHEM 50200	Strategic Organic Chemistry	
CHEM 52000	Advanced Analytical Chemistry	
CHEM 59700	Applied Data Analysis and Visualization in the Physical Sciences	
CHEM 60000	Physical Inorganic Chemistry	
CHEM 60100	Kinetics and Reaction Mechanisms	
CHEM 60200	Advanced Biophysical Chemistry	
CHEM 60500	Applied Spectroscopy	
CHEM 62100	Materials Chemistry	
CHEM 62300	Supramolecular Chemistry	
CHEM 65200	Computational Chemistry	
CHEM- 680XX	Special Topics in Chemistry	
CHEM 68500	Readings in Chemistry	
Total Hours		27

Note: Students who select 50000-level and above elective courses are subject to the requirements and limitations of the Undergraduate Students Enrolling in Graduate Courses (<https://catalog.lewisu.edu/undergraduate/general-information/registration/#Undergraduate>) catalog policy.

Forensic Chemistry Concentration

Concentration: FNSC

Code	Title	Hours
CHEM 32000	Analytical Chemistry	3
CHEM 33200	Advanced Instrumental Analysis	2
CHEM 40000	Advanced Inorganic Chemistry	3
CHEM 40500	Biochemistry I	3
CHEM 40600	Biochemistry I Lab	1
CHEM 41500	Advanced Forensic Chemistry I	4
CHEM 46500	Capstone Project	1
Select one of the following Physical/Biophysical Chemistry sequences:		8
Option 1:		
CHEM 30000	Physical Chemistry I	
CHEM 30100	Physical Chemistry I Lab	
CHEM 30500	Physical Chemistry 2	
CHEM 30600	Physical Chemistry 2 Lab	
Option 2:		
CHEM 30200	Biophysical Chemistry I	
CHEM 30300	Biophysical Chemistry Lab I	
CHEM 30700	Biophysical Chemistry 2	
CHEM 30800	Biophysical Chemistry 2 Lab	
Select at least 4 credit hours from the following:		4
CHEM 40700	Biochemistry 2	
CHEM 40800	Biochemistry 2 Lab	
CHEM 41600	Advanced Forensic Chemistry II	
CHEM 41700	Trace Analysis	
CHEM 41800	Advanced Toxicology	
CHEM 45000	Research	
CHEM 47000	Internship	
CHEM 49800	Special Topics	
CHEM 49900	Independent Study	
Total Hours		29

Chemical Physics Concentration

Concentration: CHPH

Code	Title	Hours
CHEM 30000	Physical Chemistry I	3
CHEM 30100	Physical Chemistry I Lab	1
CHEM 30500	Physical Chemistry 2	3
CHEM 30600	Physical Chemistry 2 Lab	1
CHEM 32000	Analytical Chemistry	3
CHEM 33200	Advanced Instrumental Analysis	2
CHEM 46500	Capstone Project	1
MATH 30000	Differential Equations	3
PHYS 34200	Applied Modern Physics: Atoms, Molecules, and Condensed Matter	2
PHYS 36500	Intermediate Physics Laboratory	3
Select at least 3 additional Chemistry credits from the following		3
CHEM 40000	Advanced Inorganic Chemistry	
CHEM 40100	Advanced Organic Chemistry	

CHEM 45000	Research	
CHEM 49800	Special Topics	
Select at least 6 credit hours of additional Physics requirements from the following		6
CPSC 31500	Scientific Computing	
PHYS 30000	Mechanics	
PHYS 31000	Electricity and Magnetism	
PHYS 31100	Analog and Digital Electronics	
PHYS 31800	Optics	
PHYS 44100	Quantum Mechanics	
PHYS 44200	Solid State Physics	
PHYS 47000	Undergraduate Research	
PHYS-498XX	Special Topics in Physics	
Total Hours		31

Chemical Microscopy

Concentration: CHMC

Code	Title	Hours
CHEM 30000	Physical Chemistry I	3
CHEM 30100	Physical Chemistry I Lab	1
CHEM 30500	Physical Chemistry 2	3
CHEM 30600	Physical Chemistry 2 Lab	1
CHEM 40000	Advanced Inorganic Chemistry	3
CHEM 40500	Biochemistry I	3
Select at least 15 credit hours from the following:		15
CHEM 43000	Polarized Light Microscopy	
CHEM 43100	Polarized Light Microscopy Practicum	
CHEM 43200	Raman Microspectroscopy	
CHEM 43300	Raman Microspectroscopy Practicum	
CHEM 43400	Microscopic Particle Handling	
CHEM 43500	Microscopic Particle Handling Practicum	
CHEM 43600	Scanning Electron Microscopy	
CHEM 43700	Scanning Electron Microscopy Practicum	
CHEM 43800	Infrared Microscopy	
CHEM 43900	Infrared Microscope Practicum	
CHEM 44000	Infrared Spectral Interpretation	
CHEM 44100	Infrared Spectral Interpretation Practicum	
CHEM 44200	White Powder Unknowns	
CHEM 44300	White Powder Unknowns Practicum	
CHEM 44400	Digital Photomicrography	
CHEM 44500	Digital Photomicrography Practicum	
CHEM 44600	Introduction to Forensic Trace Evidence	
CHEM 44700	Introduction to Forensic Trace Evidence Practicum	
CHEM 44800	X-Ray Microanalysis by Energy-Dispersive X-Ray Spectrometry	
CHEM 44900	X-Ray Microanalysis by Energy-Dispersive X-Ray Spectrometry Practicum	
CHEM 45000	Research	
CHEM 45100	Advanced Imaging Techniques for the Scanning Electron Microscope	
CHEM 45200	Advanced Imaging Techniques for the Scanning Electron Microscope Practicum	
CHEM 45300	Forensic Fiber Identification	

CHEM 45400	Gunshot Residue Identification
CHEM 45500	Gunshot Residue Identification Practicum
CHEM 45600	Forensic Fiber Identification Practicum
CHEM 45700	Hair Comparison
CHEM 45800	Hair Comparison Practicum
CHEM 45900	Analysis of Low Explosives
CHEM 46000	Analysis of Low Explosives Practicum
CHEM 46100	Pharmaceutical Contaminants
CHEM 46200	Pharmaceutical Contaminants Practicum
CHEM 46300	Pigment Identification
CHEM 46400	Pigment Identification Practicum

The following courses are recommended but not required:

MATH 30000	Differential Equations
MATH 30500	Linear Algebra
MATH 31500	Probability Theory

Total Hours	29
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