

CHEMISTRY, BS

for the degree of Bachelor of Science in Chemistry (Specialized Curriculum)

Undergraduate Degree Programs in Chemistry

For the Degree of Bachelor of Science in Liberal Arts and Sciences

- Major in Computer Science & Chemistry, BSLAS (http://catalog.illinois.edu/undergraduate/eng_las/computer-science-chemistry-bslas/)
- Major in Chemistry (Sciences and Letters) (<http://catalog.illinois.edu/undergraduate/las/chemistry-bslas/#degree requirement text>)
- Major in Chemistry (Sciences and Letters), Chemistry Teaching Concentration (<http://catalog.illinois.edu/undergraduate/las/chemistry-bslas/chemistry-teaching/>)

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- Major in Chemistry (Specialized Curriculum) (p. 1)
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Specialized Curriculum

Graduation requires grade point averages of at least 2.0 overall and 2.0 in chemistry, mathematics, and physics courses.

Students in the Specialized Curriculum in Chemistry must include a course in Biochemistry in the Advanced Chemistry area or the Technical Electives area to be certified by the American Chemical Society as having met its specifications.

Departmental distinction: Students qualify for graduation with distinction by exhibiting superior performance in both course work and in senior thesis research. To be eligible, a student must have a Illinois coursework major grade point average of 3.25, must take CHEM 499 (normally for two semesters) and submit a senior thesis for evaluation, and must have their undergraduate research advisor submit to the department Head a letter of support attesting to the effort invested by the student. The minimum major GPAs for Distinction, High Distinction, and Highest Distinction are 3.25, 3.5, and 3.75, respectively. Final decisions on awarding Distinction honors will be made by the Head or designee.

Graduation Requirements

Minimum hours required for graduation: 120 hours.

University Requirements

Minimum of 40 hours of upper-division coursework, generally at the 300- or 400-level. These hours can be drawn from all elements of the degree.

Students should consult their academic advisor for additional guidance in fulfilling this requirement.

The university and residency requirements can be found in the Student Code (<https://studentcode.illinois.edu/article3/part8/3-801/>) (§ 3-801) and in the Academic Catalog (<http://catalog.illinois.edu/general-information/degree-general-education-requirements/>).

General Education Requirements

Follows the campus General Education (Gen Ed) requirements (<https://courses.illinois.edu/gened/DEFAULT/DEFAULT/>). Some Gen Ed requirements may be met by courses required and/or electives in the program.

Code	Title	Hours
	Composition I	4-6
	Advanced Composition	3
	Humanities & the Arts (6 hours)	6
	Natural Sciences & Technology (6 hours)	6
	fulfilled by CHEM 202 & CHEM 204 or CHEM 102 & CHEM 104; PHYS 211, PHYS 212	
	Social & Behavioral Sciences (6 hours)	6
	Cultural Studies: Non-Western Cultures (1 course)	3
	Cultural Studies: US Minority Cultures (1 course)	3
	Cultural Studies: Western/Comparative Cultures (1 course)	3
	Quantitative Reasoning (2 courses, at least one course must be Quantitative Reasoning I)	6-10
	fulfilled by MATH 220 or MATH 221, MATH 231, MATH 241, MATH 285; PHYS 211, PHYS 212	
	Language Requirement (Completion of the third semester or equivalent of a language other than English is required)	0-15

Code	Title	Hours
Orientation and Professional Development		
LAS 101	Design Your First Year Experience	1
	OR	
LAS 100 & LAS 101	Success in LAS for International Students and Design Your First Year Experience	3
	OR	
LAS 102	Transfer Advantage	1
Total Hours		1 or 3

Code	Title	Hours
Major Core Requirements and Electives		
Core Chemistry		37
CHEM 150	First Semester Success in Chemistry (Transfer students may substitute 1 hour of 200 level or higher Chemistry, including CHEM 297, CHEM 397, CHEM 497, or CHEM 499, for the 1 hour of CHEM 150. This may not include CHEM 222 or CHEM 223 for students who took the CHEM 102, CHEM 103, CHEM 104, and CHEM 105 sequence instead of CHEM 202, CHEM 203, CHEM 204, and CHEM 205.)	
CHEM 202	Accelerated Chemistry I	
CHEM 203	Accelerated Chemistry Lab I	
CHEM 204	Accelerated Chemistry II	
CHEM 205	Accelerated Chemistry Lab II	

If necessary, CHEM 102, CHEM 103, CHEM 104, CHEM 105, CHEM 222, and CHEM 223 may be substituted for CHEM 202, CHEM 203, CHEM 204, and CHEM 205.

CHEM 236	Fundamental Organic Chem I
CHEM 237	Structure and Synthesis
CHEM 312	Inorganic Chemistry
CHEM 315	Instrumental Chem Systems Lab
CHEM 420	Instrumental Characterization
CHEM 436	Fundamental Organic Chem II
CHEM 442	Physical Chemistry I
CHEM 444	Physical Chemistry II
CHEM 445	Physical Principles Lab I

Advanced Chemistry

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CHEM or BIOC courses numbered 300 or higher, which must include three laboratory courses from the following:

CHEM 317	Inorganic Chemistry Lab
CHEM 437	Organic Chemistry Lab
CHEM 447	Physical Principles Lab II
CHEM 483	Solid State Structural Anlys
BIOC 455	Technqs Biochem & Biotech

A student who has earned at least 6 credit hours in any combination of CHEM 397, CHEM 497, or CHEM 499 must complete only two laboratory courses from the list, one of which must be CHEM 317, CHEM 437, or CHEM 447.

Mathematics

16-19

MATH 220	Calculus
or MATH 221	Calculus I
MATH 225	Introductory Matrix Theory
or MATH 227	Linear Algebra for Data Science
or MATH 257	Linear Algebra with Computational Applications
or MATH 415	Applied Linear Algebra
MATH 231	Calculus II
MATH 241	Calculus III
MATH 285	Intro Differential Equations

Physics

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PHYS 211	University Physics: Mechanics
PHYS 212	University Physics: Elec & Mag
PHYS 214	Univ Physics: Quantum Physics

Technical Electives

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CHEM (300 or higher), BIOC, CHBE (200 or higher)
 Courses in life sciences (all courses at 200 or higher)
 Mathematics or computer science above the basic level
 Other courses in the physical and biological sciences and engineering including CHEM 199 (Three hours maximum credit in CHEM 199. Additional courses in sciences and engineering can be taken, upon consultation with the SCS advisor and approval from the chemistry department. Approved courses must generally have a strong technical prerequisite, such as one year of college-level math or science.)

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Sample Sequence

This sample sequence is intended to be used only as a guide for degree completion. All students should work individually with their academic advisors to decide the actual course selection and sequence that works best for them based on their academic preparation and goals. Enrichment programming such as study abroad, minors, internships, and so on may impact the structure of this four-year plan. Course availability is not guaranteed during the semester indicated in the sample sequence.

Students must fulfill their Language Other Than English requirement by successfully completing a third level of a language other than English. See the corresponding section on the Degree and General Education Requirements page (<http://catalog.illinois.edu/general-information/degree-general-education-requirements/>).

First Year

First Semester	Hours	Second Semester	Hours
Free elective course		1 CHEM 204	3
CHEM 150		1 CHEM 205	2
CHEM 202		3 MATH 231	3
CHEM 203		2 PHYS 211	4
MATH 220 or 221		4 Composition I course Language Other than English (3rd level)	4
Language Other than English (3rd level) or Composition I course		4	
	15		16

Second Year

First Semester	Hours	Second Semester	Hours
CHEM 236		4 CHEM 436	3
CHEM 237		2 Technical Electives	3
PHYS 212		4 PHYS 214	2
MATH 241		4 MATH 225 or 415	3
General Education course		3 MATH 285	3
		General Education course	3
	17		17

Third Year

First Semester	Hours	Second Semester	Hours
CHEM 442		4 CHEM 444	4
CHEM 420		2 CHEM 445	2
CHEM 315		2 CHEM 312	3
General Education course		3 General Education course	3
General Education course		3 General Education course	3
	14		15

Fourth Year

First Semester	Hours	Second Semester	Hours
Advanced Chemistry course		3 Advanced Chemistry course	3
Advanced Chemistry lab		3 Additional Advanced Chemistry course	2
Technical Electives		3 Technical Electives	2
General Education course		3 General Education course	3
Free elective course		2 Free elective course	2
	14		12

Total Hours 120*for the degree of Bachelor of Science in Chemistry (Specialized Curriculum)*

Students graduating with the BS in Chemistry will have:

1. A thorough knowledge of the basic principles of chemistry, including atomic and molecular structure, chemical dynamics and the chemical and physical properties of substances.
2. An exposure to the subfields of chemistry, such as analytical, organic, physical, materials, inorganic, as well as chemical biology.
3. The ability to read, evaluate, interpret, and present (via oral and written communication) numerical, chemical and general scientific data, information and literature.
4. The ability to carry out experiments, use appropriate experimental apparatus effectively, and demonstrate proper laboratory safety skills.

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Chemistry

Chemistry website (<https://chemistry.illinois.edu>)
 Chemistry Faculty (<https://chemistry.illinois.edu/directory/faculty-by-type/>)
 SCS Academic Advising (<http://advising.scs.illinois.edu/>)

College of Liberal Arts & Sciences

Liberal Arts & Sciences College & Admissions requirements (<http://catalog.illinois.edu/schools/las/>)
 LAS website (<https://las.illinois.edu/>)