COMPUTER SCIENCE + CHEMISTRY, BSLAS

for the degree of Bachelor of Science in Liberal Arts and Sciences Major in Computer Science + Chemistry

Undergraduate Degree Programs in Chemistry

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

- Major in Computer Science & Chemistry, BSLAS (p. 1)
- Major in Chemistry (Sciences and Letters) (http://catalog.illinois.edu/undergraduate/las/chemistry-bslas/#degreerequirementstext)

For the Degree of Bachelor of Science in Chemistry

- Major in Chemistry (Specialized Curriculum) (http://catalog.illinois.edu/undergraduate/las/chemistry-bs/#degreerequirementstext)
- Major in Chemistry (Specialized Curriculum), Environmental Chemistry Concentration (http://catalog.illinois.edu/undergraduate/las/chemistry-bs/environmental-chemistry/)

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A Major Plan of Study Form must be completed and submitted to the LAS Student Affairs Office by the beginning of the fifth semester (60-75 hours).

Please visit the computer science advisor as well as the Chemical Sciences advising office.

General education: Students must complete the Campus General Education (https://courses.illinois.edu/) requirements including the campus general education language requirement.

Minimum required major and supporting course work: Normally equates to 66 hours. Twelve hours of 300- and 400-level in the major must be taken on this campus.

Minimum hours required for graduation: 120 hours.

Code	Title	Hours
Required Computer Science Coursework		
CS 100	Computer Science Orientation (recommended; CS 100 is an orientation course aimed at first-year students, so students who declare the major after the freshman year are not required to complete it.)	1
CS 124	Introduction to Computer Science I	3
CS 128	Introduction to Computer Science II	3
CS 173	Discrete Structures	3
CS 225	Data Structures	4
CS 222	Software Design Lab	1
Choose one of the following combinations		8-11
CS 233 & CS 341	Computer Architecture and System Programming	
OR		
CS 340	Introduction to Computer Systems	
& two CS courses at the 400 level above CS 403, excluding CS 421 and CS 491		
Choose one of the following:		3
STAT 200	Statistical Analysis	
STAT 212	Biostatistics	
CS 361	Probability & Statistics for Computer Science	
CS 374	Introduction to Algorithms & Models of Computation	4
CS 421	Programming Languages & Compilers	3
Mathematics (may also fulfill the General Education Quantitative Reasoning I and II requirements)		
MATH 221	Calculus I	4-5
or MATH 220	Calculus	
MATH 225	Introductory Matrix Theory	2 or 3
or MATH 257	Linear Algebra with Computational Applications	
MATH 231	Calculus II	3
Required Chemistry Coursework - Minimum of 24 hours		
Foundation Courses- 12 hours required		
Select one of the following (General or Accelerated Chemistry):		8
CHEM 102 & CHEM 103 & CHEM 104 & CHEM 105	General Chemistry I and General Chemistry Lab I and General Chemistry II and General Chemistry Lab II	
or		
CHEM 202 & CHEM 203 & CHEM 204	Accelerated Chemistry I and Accelerated Chemistry Lab I and Accelerated Chemistry II	
CHEM 232	Elementary Organic Chemistry I	4
or CHEM 236	Fundamental Organic Chem I	
Advanced Chemistry Courses- 12 hours		
CHEM 440	Physical Chemistry Principles	4
or CHEM 442	Physical Chemistry I	
In consultation with an advisor, choose 8 hours of 300- or 400-level chemistry courses (The following courses may not be used to complete the advanced chemistry hours: CHEM 315, CHEM 397, CHEM 445, CHEM 447, CHEM 492, CHEM 494, CHEM 496, CHEM 497 and CHEM 499; and any course in another unit, such as any BIOC or MCB course.)		8

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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 104 or 204	3
CS 100	1	CHEM 105 (or Free elective course)	1
CS 124	3	CS 128	3
CHEM 102 or 202	3	MATH 231	3
CHEM 103 or 203	1	Composition I or General Education course	4
MATH 220 or 221	5		
General Education course or Composition I	3		
	17		**14**

Second Year

First Semester	Hours	Second Semester	Hours
CHEM 232 or 236	4	Advanced Chemistry course	3
CS 173	3	CS 225	4
General Education course	3	CS 222	1
Language Other Than English (3rd level)	4	MATH 225 or 257	3
		Language Other Than English (4th level)	4
	14		**15**

Third Year

First Semester	Hours	Second Semester	Hours
CS 233 or 340	4	CS 341 (or CS 400-level course)	4
Advanced Chemistry course	3	Advanced Chemistry course	2
STAT 200 (or STAT 212 or CS 361)	3	General Education course	3
General Education course	3	General Education course	3
Free elective course	3	Free elective course	3
	16		**15**

Fourth Year

First Semester	Hours	Second Semester	Hours
CS 374	4	CS 421	3
CHEM 440 or 442	4	General Education course	3
CS 400-level course or Free elective course	3	General Education course	3
General Education course	3	Free elective course	3
		Free elective course	3
	14		**15**

Total Hours 120

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By the time of graduation, students will have:

Computer Science:

1. An ability to apply knowledge of computing and mathematics appropriate to the discipline
2. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
3. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
4. An ability to function effectively on teams to accomplish a common goal
5. An understanding of professional, ethical, legal, security and social issues and responsibilities
6. An ability to communicate effectively with a range of audiences
7. An ability to analyze the local and global impact of computing on individuals, organizations, and society
8. A recognition of the need for and an ability to engage in continuing professional development
9. An ability to use current techniques, skills, and tools necessary for computing practice
10. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the trade-offs involved in design choices
11. An ability to apply design and development principles in the construction of software systems of varying complexity

Chemistry:

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 sub-fields of chemistry, including analytical, inorganic, organic and physical chemistry.
3. The ability to read, evaluate, interpret, and present (via oral and written communication) numerical, chemical and general scientific 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

CS + X Degrees (https://cs.illinois.edu/academics/undergraduate/degree-program-options/cs-x-degree-programs/#requirements)
CS + Chemistry (https://chemistry.illinois.edu/computer-science-chemistry-degree/)
Chemistry Department page (https://chemistry.illinois.edu/)
scs-advising@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/)

Grainger College of Engineering

Grainger College of Engineering page (https://grainger.illinois.edu)
undergrad@cs.illinois.edu (academic@cs.illinois.edu)