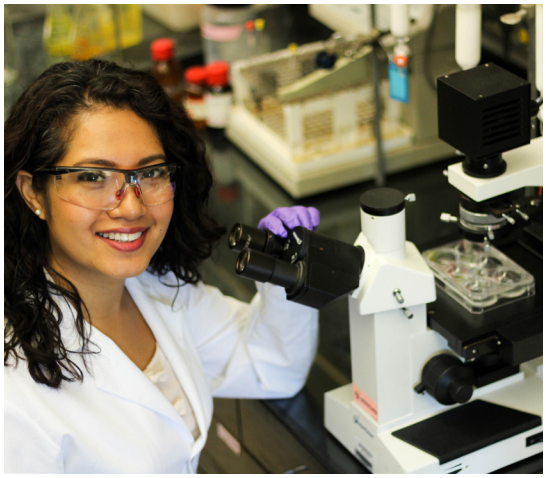
Chemistry at Illinois

Chemistry Major in Sciences and Letters

For the Degree of Bachelor of Science in Liberal Arts and Sciences (BSLAS)
(Effective for students matriculating Summer/Fall 2022)

Chemistry Major 10KV0335BSLA



This chemistry major has fewer technical requirements than the Specialized Chemistry curriculum but allows the most flexibility to pursue other interests including double majors and minors. Pre-professionals (pre-med, pre-pharm, pre-dental, or other pre-professional fields) may choose either this major or the Specialized Chemistry Curriculum (10KV0335BS).

What can you do with a Chemistry Sciences and Letters Degree?

Many of our undergraduate chemistry majors go on to graduate, medical, pharmacy, optometry, law, or other schooling. Those who enter the workforce with a BSLAS degree typically choose one of the three paths: education, government, or industry. Within industry, there are a number of various specialties that students can choose, including chemicals, paints, fuels (petroleum, coal, nuclear), materials (metals, wood, plastics, textiles, paper), electronics, cosmetics, agricultural products, food science, consumer products, pharmaceuticals/healthcare, environment (water, safety, natural resources, energy), product analysis/quality control, consulting/business, or law.

Major Requirements	Hours
A. Chemistry and biochemistry courses including: [1,2] 1. CHEM 150: First Semester Success in Chemistry [3] 2. Chem 440: Physical Chemistry Principles or CHEM 442: Physical Chemistry I	22 – 26
B. Two other 300- or 400-level courses, at least one of which must be outside physical chemistry	4 – 8
C. Mathematics Requirement: 1. MATH 220: Calculus or MATH 221: Calculus I 2. MATH 231: Calculus II 3. MATH 241: Calculus III	11 – 12
D. Physics Requirement: *select one group of the following* 1. PHYS 101: College Physics - Mech & Heat and PHYS 102: College Physics - E&M & Modern 2. PHYS 211: University Physics - Mechanics and PHYS 212: University Physics: Elec & Mag	8 – 10

Departmental distinction: Students qualify for graduation with distinction by exhibiting superior performance in both course work and senior thesis research. To be eligible, a student must have a UIUC 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.

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

Minimum required major and supporting course work: Minimum required major and supporting course work normally equates to 49-52 hours including at least 30 hours in Chemistry or Biochemistry courses. Twelve hours of 300- and 400-level courses in Chemistry and/or Biochemistry must be taken at UIUC / at Illinois. Transfer credit in chemistry must be approved by an advisor in chemistry to be included in the 30 hours.

Transfer credit must be validated by the Assistant Director of General Chemistry.

The diploma for this major reads as “Bachelor of Science in Liberal Arts and Sciences.” The transcript will specify “Major in Chemistry.”

[1] Excluding CHEM 101, CHEM 108, and CHEM 199.

[2] No more than 10 hours of the following courses may count toward the 22-26 hours in Chemistry: CHEM 197, CHEM 297, CHEM 397, CHEM 496, CHEM 497, and CHEM 499.

[3] On- and off-campus transfer students may elect to take an additional 1 hour of 200 level or higher Chemistry, including CHEM 297, CHEM 397, CHEM 496, CHEM 497, or CHEM 499 as long as no more than 10 total hours of the total 22-26 required Chemistry hours come from CHEM 297, CHEM 397, CHEM 496, CHEM 497, CHEM 499.

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Bachelor of Science in Liberal Arts and Sciences

Suggested Four-Year Program

Lab classes are listed in blue

YEAR 1

Semester 1 Hours	Course	Semester 2 Hours	Course
3	CHEM 102: General Chemistry I	3	CHEM 104: General Chemistry II
1	CHEM 103: General Chemistry I Lab	1	CHEM 105: General Chemistry II Lab
1	CHEM 150: First Semester Success in Chemistry	3	MATH 231: Calculus II
4 - 5	MATH 220 or 221: Calculus or Calculus I	3 - 4	RHET 105 Composition I or other General Education
3 - 4	RHET 105 Composition I or other General Education	5-6	General Education/Electives
1	LAS 101	**15 - 17**	**Total**
15 - 16	**Total**		

YEAR 2

Semester 3 Hours	Course	Semester 4 Hours	Course
4	CHEM 232: Elementary Organic Chemistry I	4	CHEM 332: Elementary Organic Chem II
2	CHEM 233: Elementary Organic Chem I Lab	11	General Education/Electives
4	MATH 241: Calculus III	**15**	**Total**
6	General Education/Electives		
16	**Total**		

YEAR 3

Semester 5 Hours	Course	Semester 6 Hours	Course
3	CHEM Elective [1]	3	CHEM Elective [1] (300 - 400 level)
5	PHYS 101: College Physics - Mech & Heat	5	PHYS 102: College Physics - E&M & Modern
7	General Education/Electives	8	General Education/Electives
15	**Total**	**16**	**Total**

YEAR 4

Semester 7 Hours	Course	Semester 8 Hours	Course
4	CHEM 440: Physical Chemistry Principles	1-3	CHEM Elective [1] (300 - 400 level)
11	General Education/Electives	13	General Education/Electives
15	**Total**	**14 - 15**	**Total**

[1] Check with Academic Advisors in the School of Chemical Sciences for a current list of Chemistry elective courses: https://scs.illinois.edu/academics/advising.

Chemistry at Illinois

Bachelor of Science in Chemistry

Chemistry Curriculum
(Effective for students matriculating Summer/Fall 2022)

The most up-to-date, full details about degree requirements can be found at http://catalog.illinois.edu/undergraduate/las/chemistry-bs/. If you have questions about course requirements, check with Academic Advisors in the School of Chemical Sciences https://scs.illinois.edu/academics/advising.

For the degree of Bachelor of Science in Chemistry, completion of each of the seven categories (A through G) listed below is required for graduation. The typical program of courses required to satisfy these categories totals 128-134 hours; in no case will a program totaling less than 120 hours qualify for graduation even if all seven categories are satisfied. Graduation requires grade point averages of at least 2.0 (a C average) overall and 2.0 in chemistry, mathematics, and physics courses. Students in the specialized curriculum must include a course in biochemistry 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 senior thesis research. To be eligible, a student must have a 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.

Major Requirements	Hours
A. Core Chemistry Requirements – CHEM 150,[1] 202, 203, 204, 205,[2] 236, 237, 312, 315, 420, 436, 442, 444, and 445	37[3]
B. Advanced Chemistry Requirement – At least 11 semester hours of chemistry or biochemistry numbered 300 or higher: 1. One of the following: [4] CHEM 317, 437, or 447 2. Additional laboratory work: [4] Students who complete less than 6 semester hours with a combination of CHEM 397, 497, and/or 499 must complete two additional courses from the following: CHEM 317, 437, 447, 483; BIOC 455 3. Additional chemistry/biochemistry to complete the 11 semester hour requirement (including MCB 354 or MCB 450) 4. One biochemistry course must be included for ACS certification	11
C. Mathematics Requirement – MATH 220 (or 221), 231, and 241	11 – 12[3]
D. Physics Requirement – PHYS 211, 212, and 214	10[3]
E. Required Technical Electives – 14 credit hours including: 1. Required MATH 225 (or 257, or 415) and 285 (or equivalents) [5] 2. Strongly recommended: CHEM 499 (maximum of 10 semester hours) 3. Recommended: CS 101 (Intro Computing for Engr & Science) 4. Other technical courses chosen from: • CHEM (300 or higher), BIOC, CHBE (200 or higher) • Courses in Life Sciences (MCB 250 and all IB/MCB courses at the 200-level and higher) • Mathematics or Computer Science – courses above the basic level • Other courses in the physical and biological sciences and engineering including CHEM 199 (3 semester hours maximum) • Additional courses in the sciences and engineering can be taken upon the approval of the SCS Academic Advising Office *Most approved courses have a strong technical prerequisite, such as one year of college-level math or science*	14
F. Nontechnical Requirements – https://courses.illinois.edu/gened/DEFAULT/DEFAULT 1. Required foreign language: 3 high school years or equivalent 2. Composition I writing requirement (RHET 105, CMN 111 + 112, or equivalent) 3. Advanced Composition [6] 4. Humanities (at least 6 semester hours) to satisfy the Campus General Education Requirements 5. Social and Behavioral Science (at least 6 semester hours) to satisfy the Campus General Education Requirements 6. Cultural Studies to satisfy the campus General Education Requirements [7]	19 – 21[3]
G. Free electives – 30 semester hours required Restrictions: (1) Courses preparatory to or used to satisfy the minimum requirements specified in categories A - F may not be included in Category G (2) No first-year foreign language course (e.g., 101, 102 or equivalent) may be included unless it is a different language than used to satisfy Category F.1	30

[1] On and off-campus transfer students in the BS curriculum may substitute 1 additional hour of 200 level or higher Chemistry (including CHEM 297, CHEM 397, CHEM 496, CHEM 497, or CHEM 499) for CHEM 150. This may not include CHEM 222 or 223.
[2] If necessary, CHEM 102 and CHEM 103, CHEM 104 and CHEM 105, CHEM 222, and CHEM 223 may be substituted for CHEM 202, CHEM 203, CHEM 204, and CHEM 205. Warning: CHEM 222 and CHEM 223 are offered only in the fall semester.
[3] Hours given are those typical to meet requirement.
[4] The course taken to satisfy B.1. may not be counted toward B.2.
[5] Students contemplating transfer to the Chemical Engineering curriculum should choose MATH 415 or 257.
[6] The course taken to satisfy the Advanced Composition requirement may also be used to partially satisfy one of the categories A-E (if appropriate) or may be used to partially satisfy Category G.
[7] The courses taken to satisfy Western, Non-Western, and US Minority Cultures requirements may also be used to satisfy Categories F (3, 4 and 5) and/or G.

Chemistry at Illinois

Bachelor of Science in Chemistry

Specialized Chemistry Curriculum

Suggested Four-Year Program

Lab classes are listed in orange

YEAR 1

Semester 1 Hours	Course	Semester 2 Hours	Course
3	CHEM 202: Accelerated Chemistry I	3	CHEM 204: Accelerated Chemistry II
2	CHEM 203: Accelerated Chemistry I Lab	2	CHEM 205: Accelerated Chemistry II Lab
1	CHEM 150: First Semester Success in Chemistry	3	MATH 231: Calculus II
		4	PHYS 211: Univ. Physics - Mechanics
4 - 5	MATH 220 or 221: Calculus or Calculus I	3 - 4	RHET 105: Composition I or other General Education
3 - 4	RHET 105: Composition I or other General Education	**15 - 16**	**Total**
1	LAS 101		
15 - 16	**Total**		

YEAR 2

Semester 3 Hours	Course	Semester 4 Hours	Course
4	CHEM 236: Fundamental Organic Chemistry I	3	CHEM 436: Fundamental Organic II
		2	MATH 225: Intro to Matrix Theory
2	CHEM 237: Struc. and Synthesis	3	MATH 285: Intro Differential Equations
4	MATH 241: Calculus III	2	PHYS 214: University Physics - Quantum Physics
4	PHYS 212: University Physics - Electricity and Magnetism	6 - 8	General Education/Electives
3	General Education/Electives	**16 - 18**	**Total**
17	**Total**		

YEAR 3

Semester 5 Hours	Course	Semester 6 Hours	Course
4	CHEM 442: Physical Chemistry I	3	CHEM 312: Inorganic
2	CHEM 315: Instrumental Chemical Systems Lab	4	CHEM 444: Physical Chemistry II
		2	CHEM 445: Physical Principles Lab I
2	CHEM 420: Instrumental Charact. of Chem. Systems	8	General Education/Electives
8	General Education/Electives	**17**	**Total**
16	**Total**		

YEAR 4

Semester 7 Hours	Course	Semester 8 Hours	Course
4	CHEM 499: Senior Thesis	6	CHEM 499: Senior Thesis [1]
2 - 4	Advanced Chemistry Lab	2-3	Advanced Chemistry Lab
8 - 10	General Education/Electives	7 - 8	General Education/Electives
16	**Total**	**16**	**Total**

[1] Students with fewer than 6 semester hours of a combination of CHEM 397, 497, and/or 499 must complete an additional advanced Chemistry lab.

Students must take a biochemistry course in order to receive an ACS certified degree.