CHEMISTRY, BS

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

department website: https://chemistry.illinois.edu
department faculty: Chemistry Faculty (https://chemistry.illinois.edu/directory/faculty-by-type/)
advising: SCS Academic Advising (http://advising.scs.illinois.edu/)
overview of college admissions & requirements: Liberal Arts & Sciences (http://catalog.illinois.edu/schools/las/academic-units/)
college website: https://las.illinois.edu/

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/#degerequirementstext)
- Major in Chemistry (Sciences and Letters), Chemistry Teaching Concentration (http://catalog.illinois.edu/undergraduate/las/chemistry-bslas/chemistry-teaching/)

For the Degree of Bachelor of Science in Chemistry

- Major in Chemistry (Specialized Curriculum) (p. 1)
- Major in Chemistry (Specialized Curriculum), Environmental Chemistry Concentration (http://catalog.illinois.edu/undergraduate/las/chemistry-bs/environmental-chemistry/)

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

Specialized Curriculum

The typical program of courses required to satisfy this degree totals 128-134 hours; in no case will a program totaling less than 120 hours qualify for graduation. Graduation requires grade point averages of at least 2.0 overall and 2.0 in chemistry, mathematics, and physics courses. The Department of Chemistry will supply, upon request, a brochure showing recommended semester-by-semester programs for the completion of the curriculum.

Students in the specialized curriculum in Chemistry must include a course in Biochemistry in the Advanced Hours area or the Technical Elective 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 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.

Requirements

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

Minimum hours required for graduation: 120 hours.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CHEM 150</td>
<td>First Semester Success in Chemistry ²</td>
<td>37</td>
</tr>
<tr>
<td>CHEM 202</td>
<td>Accelerated Chemistry I</td>
<td></td>
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<tr>
<td>CHEM 203</td>
<td>Accelerated Chemistry Lab I</td>
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<tr>
<td>CHEM 204</td>
<td>Accelerated Chemistry II</td>
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<tr>
<td>CHEM 205</td>
<td>Accelerated Chemistry Lab II ³</td>
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<tr>
<td>CHEM 236</td>
<td>Fundamental Organic Chem I</td>
<td></td>
</tr>
<tr>
<td>CHEM 237</td>
<td>Structure and Synthesis</td>
<td></td>
</tr>
<tr>
<td>CHEM 312</td>
<td>Inorganic Chemistry</td>
<td></td>
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<tr>
<td>CHEM 315</td>
<td>Instrumental Chem Systems Lab</td>
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<tr>
<td>CHEM 420</td>
<td>Instrumental Characterization</td>
<td></td>
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<tr>
<td>CHEM 436</td>
<td>Fundamental Organic Chem II</td>
<td></td>
</tr>
<tr>
<td>CHEM 442</td>
<td>Physical Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHEM 444</td>
<td>Physical Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHEM 445</td>
<td>Physical Principles Lab I</td>
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Advanced Chemistry

Chemistry/Biochemistry courses numbered 300 or higher, which must include one from the following:

- CHEM 317 Inorganic Chemistry Lab
- CHEM 437 Organic Chemistry Lab
- CHEM 447 Physical Principles Lab II ⁴

Additional laboratory work:

- BIOL 455 Techniques Biochem & Biotech
- CHEM 317 Inorganic Chemistry Lab
- CHEM 437 Organic Chemistry Lab
- CHEM 447 Physical Principles Lab II
- CHEM 483 Solid State Structural Analysis ⁵

Additional chemistry/biochemistry courses to complete the 11-hour requirement in advanced chemistry

Mathematics: ¹ ¹¹ ¹²

- MATH 220 Calculus
- MATH 231 Calculus II
- MATH 241 Calculus III

Physics: ¹ ¹⁰

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

Technical Electives, including the following ¹⁴

- Required Mathematics:
  - MATH 225 Introductory Matrix Theory ⁶
  - or MATH 41 Applied Linear Algebra
  - MATH 285 or equivalent

- Strongly Recommended:
  - CHEM 499 Senior Thesis (maximum of 10 hours)

- Recommended: basic computer science

Information listed in this catalog is current as of 11/2021
Other technical courses chosen from: 14

Chemistry (300 or higher), biochemistry, chemical engineering (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

Nontechnical Requirements 8  Variable

General education:

Foreign language - three semesters of college study
(or three years of high school study) in a single foreign language

Composition I

Advanced Composition 9

Humanities/Arts to satisfy the campus general education requirements

Social/Behavioral sciences to satisfy the campus general education requirements

Cultural Studies to satisfy the campus general education requirement 10

Free electives 11  30

1 Hours given are those typical to meet requirement.

2 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 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.

3 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.

4 The course chosen from CHEM 317, CHEM 437, or CHEM 447 cannot be used to satisfy the additional chemistry lab requirement.

5 Students who present less than 6 semester hours credit in a combination of CHEM 397, CHEM 497 and/or CHEM 499 for graduation must complete two additional courses chosen from the list. Students who will present at least 6 semester hours credit in a combination of CHEM 397, CHEM 497 and/or CHEM 499 for graduation are required to complete only one laboratory course from the list.

6 Students contemplating transfer to the chemical engineering curriculum should choose MATH 415.

7 Three hours maximum credit in CHEM 199. Additional courses in the sciences and engineering can be taken upon the approval of the chair of the chemistry department advising committee. Most approved courses must have a strong technical prerequisite, such as one year of college-level math or science.

8 The requirements for the Campus General Education categories Natural Sciences and Technology and Quantitative Reasoning I and II are fulfilled through required coursework in the curriculum.

9 The courses taken to satisfy Advanced Composition requirement may also be used to partially satisfy one of the core chemistry, advanced chemistry, mathematics, physics, or technical electives requirements (if appropriate), or may be used to partially satisfy the free electives requirements.

10 The courses taken to satisfy Western and/or Non-Western Civilization requirements may also be used to satisfy nontechnical and/or free elective categories.

11 Restrictions: (1) Courses preparatory to or used to satisfy the minimum requirements specified in the above requirements may not be included as free electives. (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 the foreign language nontechnical requirement.