BS in Chemistry - ACS Certified

Chemistry involves the understanding of the structure and reactivity of matter from atomic- and molecular-level perspective. Degrees in Chemistry involve training in analytical, inorganic, organic, and physical chemistry. Elective courses are also available allowing students to pursue interests in materials, biological, and other advanced areas of chemistry.

The Bachelor of Science degree is designed for students interested in an in-depth preparation, including advanced lab work. This degree is an excellent preparation for students interested in pursuing Chemistry or Biochemistry as a career. It also serves as excellent preparation for students applying to professional programs in medicine, dentistry, pharmacy and other health allied fields.

Admissions

See Admissions for information about entrance pathways and application instructions.

Degree Requirements

BS Chemistry Checklist - ACS Certified (PDF)

Mathematics (choose one sequence)

- Calculus: MATH 124 (5), 125 (5), 126 (5)
- Honors Calculus: MATH 134 (5), 135 (5), 136 (5)

Two additional math courses above the 200 level are required if the regular calculus sequence is taken. Recommended (choose one sequence):

- MATH 307 (3) and 308 (3)
- AMATH 351 (3) and 352 (3)

Physics (choose one sequence)

- Calculus-based: PHYS 121 (5), 122 (5), 123 (5)
- Algebra-based: PHYS 114 (4), 115 (4), 116 (4)

Calculus-based series is recommended. One credit lab is included in the calculus-based physics series.

One credit of laboratory:

- PHYS 117, 118, 119 (1)

General Chemistry (choose one sequence)

- Regular: CHEM 142 (5), 152 (5), 162 (5)
• Honors: CHEM 145 (5), 155 (5), 165 (5)
• Accelerated: CHEM 143 (6), 153 (6)

Analytical Lab
• CHEM 321 (5)
• CHEM 426 (3) or 428 (3)

Inorganic Chemistry
• CHEM 312 Lecture (3)
• CHEM 317 Laboratory (4)
• CHEM 416 Transition Metals (3)

Students completing 155 and 165 are exempt from CHEM 312.

Organic Chemistry (choose one sequence)
• Regular: CHEM 237 (4), 238 (4), 239 (4)
  • Laboratory: 241 (3), 242 (3)
• Honors: CHEM 335 (4), 336 (4), 337 (4)
  • Laboratory: 346 (3), 347 (3)

Physical Chemistry
• CHEM 455 (3), 456 (3), 457 (3), 461 (3)

Biochemistry
• BIOC 405 or CHEM 432 or CHEM 436

Advanced Chemistry
The two parts of this requirement must total a minimum of 5 credits.

• Choose one 400 level lab from the following:
  • 462 Organic Synthesis
  • 463 Spectroscopy
  • 464 Computers in Data Acquisition
  • 466 Energy Materials, Devices
• Additional 400-level CHEM/BIOC course not previously taken.

Honors students only may apply CHEM 399 or 499 for Part B.

Sample Schedule

<table>
<thead>
<tr>
<th>Year</th>
<th>Autumn Courses</th>
<th>Winter Courses</th>
<th>Spring Courses</th>
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<tbody>
<tr>
<td>1st Year</td>
<td>Chem 142 (5)</td>
<td>Chem 152 (5)</td>
<td>Chem 162 (5)</td>
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<td>Math 124 (5)</td>
<td>Math 125 (5)</td>
<td>Math 126 (5)</td>
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<td>English Composition (5)</td>
<td>VLPA &quot;W&quot; (5)*</td>
<td>I&amp;S (5)*</td>
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<tr>
<td>Year</td>
<td>Autumn Courses</td>
<td>Winter Courses</td>
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<tr>
<td>2nd Year</td>
<td>Chem 237 (4)</td>
<td>Chem 238 (4)</td>
<td>Chem 239 (4)</td>
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<td></td>
<td>Phys 121 (5)</td>
<td>Phys 122 (5)</td>
<td>Phys 123 (5)</td>
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<td>Math 307 (3)</td>
<td>Math 308 (3)</td>
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<td></td>
<td>Bioc 405 (3)</td>
<td>Chem 312 (3)</td>
<td>Chem 317 (4)</td>
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<td>3rd Year</td>
<td>Chem 455 (3)</td>
<td>Chem 456 (3)</td>
<td>Chem 457 (3)</td>
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<td>VLPA &quot;W&quot; (5)*</td>
<td>VLPA (5)*</td>
<td>I&amp;S (4)*</td>
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<td></td>
<td>Foreign Language 101 (5)</td>
<td>Foreign Language 102 (5)</td>
<td>Foreign Language 103 (5)</td>
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<td>Chem 399/499 (2)**</td>
<td>Chem 399/499 (2)**</td>
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<tr>
<td>4th Year</td>
<td>Chem 416 (3)</td>
<td>Chem 426 (3)</td>
<td>Advanced Chem Course (3)</td>
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<td>Chem 461 (3)</td>
<td>Advanced Chem Lab (3)</td>
<td>VLPA (5)*</td>
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<td></td>
<td>I&amp;S (5)</td>
<td>I&amp;S (6)*</td>
<td>Electives (4)</td>
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<tr>
<td></td>
<td>Chem 399/499 (2)**</td>
<td>Chem 499 (2)**</td>
<td>Chem 499 (2)**</td>
</tr>
</tbody>
</table>

* Visual, Literary and Performing Arts (VLPA) & Individuals and Societies (I&S). Students are expected to understand and complete all general education requirements as detailed in the General Catalog.

Undergraduate advisers can help set up individual schedules according to students' needs and constraints.

** Students are strongly encouraged to include undergraduate research in their schedule. Every student can count research credits as elective credits. Chem 299 and 499 can also meet the Writing "W" requirements.

** Grade Point Average Requirements**

- This degree is certified by the American Chemical Society.
- Degree requires a minimum of **183 credits**. Depending on the courses chosen, the required credits to complete the degree may be higher than 183.
- **Minimum grade of 2.0 is necessary for each required chemistry course.**
- Overall cumulative grade point average of **2.5** is required.
- **Cumulative grade point average of 2.5 is required for all CHEM, MATH, PHYS, and/or BIOC courses used to satisfy the major requirements.**
- Model schedule shows that students may need to take more than the standard 15 credits per quarter to complete the degree in four years. The schedule is provided to show the progression of courses, the inclusion of research, and the college requirements integrated into the major. Some students elect to stay an additional quarter or take credits during the summer to reach the required total with the standard course load.

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