BS in Chemistry

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 (PDF)

Mathematics (choose one sequence)

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

Additional Math - one approved 300 level or higher. Recommended: MATH 308 (3) or AMATH (352)

Students who have taken the Honors 134, 135, 136 sequence are exempt from this additional math requirement.

Physics (choose one sequence)

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

The calculus-based series is recommended. NOTE: One credit lab is included with each course 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)
Inorganic Chemistry (choose one)
- CHEM 312 Lecture (3) - for students who took 142-152-162
- CHEM 416 Transition Metals Lecture (3) - for students who took 145-155-165

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

Organic laboratory begins with the second lecture course.

Physical Chemistry
- CHEM 455 (3), 456 (3), 457 (3)

Chemistry Labs
- Two of the three labs: CHEM 317 (4), 321 (5), and 461 (3)
- Five additional credits from the following: CHEM 242 (3), 317 (4), 321 (5), 347 (3), 426 (3), 428 (3), 461 (3), 462 (2 or 3), 463 (2), 464 (3), 466 (3), or BIOC 426 (4)

Science Electives (11 credits)
- 400 level CHEM/BIOC lecture or lab courses
- Students who have a chemistry grade point average of 3.3 can apply up to six credits of CHEM 399 or 499 research
- MATH 307 or AMATH 351 or STATE 311 also count as a science elective

*This page outlines the degree requirements for the non-ACS certified chemistry degree. An ACS-Certified degree is described on a separate page. See BS in Chemistry - ACS Certified.*

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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<td>2nd Year</td>
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<td>Chem 239 (4)</td>
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<td>Math 308 (3)</td>
<td>Chem 241 (3)</td>
<td>Chem 242 (3)</td>
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<td>Phys 121 (5)</td>
<td>Phys 122 (5)</td>
<td>Phys 123 (5)</td>
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<tr>
<td></td>
<td>I&amp;S (5)*</td>
<td>VLPA (5)*</td>
<td>I&amp;S (5)*</td>
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<tr>
<td>3rd Year</td>
<td>Chem 455 (3)</td>
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<td>Chem 457 (3)</td>
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<td>Chem 321 (5)</td>
<td>Chem 312 (3)</td>
<td>Chem 317/461 (3)</td>
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<td>Foreign Language 101 (5)</td>
<td>Foreign Language 102 (5)</td>
<td>Foreign Language 103 (5)</td>
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<td>4th Year</td>
<td>Science Elective (3)</td>
<td>Science Elective (3)</td>
<td>Science Elective (3)</td>
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<td></td>
<td>Science Elective (2)</td>
<td>Chem Lab (2-3)</td>
<td>Elective (5)</td>
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<td>VLPA &quot;W&quot; (5)</td>
<td>I&amp;S (5)*</td>
<td>VLPA (5)*</td>
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<tr>
<td></td>
<td>Chem 399/499 (3)**</td>
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</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.
** All interested students are strongly encouraged to pursue undergraduate research. Student can count research credits as general elective credits needed for the degree. Chem 299W and 49W9 can also meet the Writing "W" requirements.

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

Major Credit and Grade Point Checklist

- Chemistry BS degree, non-ACS certified, requires a minimum of 180 credits. Depending on the courses chosen, the minimum total may increase.
- A minimum grade of 2.0 is necessary for each required chemistry course.
- An overall cumulative grade point average of 2.5 is required.
- A "science" GPA of 2.5 is required. The "science" GPA is calculated from CHEM, MATH, PHYS and/or BIOC courses used to satisfy the non-ACS certified degree requirements.
  - Note: The Model Schedule plans for up to 17 credits per quarter, which is above the standard 15.
- Each course can only be used to fulfill one requirement.

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