# Chemistry - B.S.

The Department of Chemistry offers the Bachelor of Science degree for students who intend to become professional chemists or who want to do graduate work in chemistry.

**121 hours (minimum)**

Any student earning a Bachelor of Science (BS) degree must complete a minimum of 60 hours in natural, physical, mathematical, and computer science. A complete description of College requirements for a Bachelor of Science degree, including a specific listing of courses applicable to the 60-hour requirement, can be found on page 96 of the 2004-2005 UK Bulletin.

### University Studies Program Requirements

- **I. Math** (completed by Premajor Requirement)
- **II. Foreign Language** (placement exam recommended) ...........0-8
- **III. Inference–Logic (completed by Premajor Requirement)**
- **IV. Written Communications** ..................................................3-6
- **V. Oral Communication** (partially completed by Major Requirement) ........................................ 1
- **VI. Natural Sciences (completed by Premajor Requirements)**
- **VII. Social Sciences ..................................................................6
- **VIII. Humanities ................................................................. 6
- **IX. Cross-Cultural (choose a Humanities course) ..................3
- **X. Electives (choose a Social Science course) ..................... 3

**USP hours:** ............................................................ 22-33

### College Requirements

- **I. Foreign Language (placement exam recommended) ...........0-6
- **II. Disciplinary Requirements**
  - a. Natural Science (completed by Major Requirements)
  - b. Social Science (completed by USP Elective Requirement)
  - c. Humanities (completed by USP Cross-Cultural Requirement)
- **III. Laboratory or Field Work (completed by Premajor Requirement)**
- **IV. Electives ...............................................................................6

**College Requirement hours:** ................................................... 6-12

### Premajor Requirements

- **MA 113 Calculus I .................................................................4
- **MA 114 Calculus II .............................................................. 4
- **CHE 105 General College Chemistry I ......................... 3
- **CHE 107 General College Chemistry II ....................... 3
- **CHE 115 General College Chemistry Laboratory .......... 3

**Premajor hours:** .................................................................. 17

### Major Requirements

**Major Core Requirements**

- **CHE 226 Analytical Chemistry .............................................3
- **CHE 230 Organic Chemistry I ..............................................3
- **CHE 231 Organic Chemistry Laboratory I .................... 2
- **CHE 232 Organic Chemistry II ........................................... 3
- **CHE 441G Physical Chemistry Laboratory .................. 2
- **CHE 442G Thermodynamics and Kinetics .....................3
- **CHE 450G Practical Inorganic Chemistry .................... 4
- **CHE 522 Instrumental Analysis ........................................ 4

- **CHE 532 Spectrometric Identification of Organic Compounds ...... 2
- **CHE 533 Qualitative Organic Analysis Laboratory ..................2
- **CHE 547 Principles of Physical Chemistry I .................. 3
- **CHE 550 Biological Chemistry I .................................... 3
- **CHE 572 Communication in Chemistry (2 semesters) ...........2

**Major Core hours:** .................................................................. 35

### Other Course Work Required for the Major

**From the Major Department:**

- **Chemistry Major Field Options** ...........................................6
- **Choose 6 hours from the following: up to 6 hours of CHE 395, any CHE 500-level course except for those required (CHE 522/532/533/550/572); BCH 401G or BCH 501; and BCH 502.

**From the Mathematics Department**

- **MA 213 Calculus III .................................................................4
- **MA 322 Matrix Algebra and its Applications .................... 3

**From the Physics Department**

- **PHY 231/232 General University Physics ....................... 8
- **PHY 241/242 General University Physics Laboratory ........ 2

**Other Major hours:** .......................................................... 23

### Electives

Electives should be selected by the student to lead to the minimum total of 120 hours required for graduation.

**Total Minimum Hours Required for Degree** ..................................... 121

*Any language may be used to satisfy the USP and College Foreign Language requirement – German is recommended.

*COM 199 + 2 semesters of CHE 572 satisfy the USP Oral Communication Requirement.

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**Curriculum for B.S. in Chemistry**

**Freshman Year**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
<th>Hours</th>
</tr>
</thead>
</table>
| **First Semester** | CHE 105 General College Chemistry I .............................................3  
|                  | ENG 101 Writing I ........................................................................ 3  
|                  | MA 113 Calculus I .........................................................................4  
|                  | University Studies (VII) ..................................................................3  
|                  | University Studies (VIII) ................................................................3  
| **Second Semester** | CHE 107 General College Chemistry II .............................................3  
|                  | CHE 115 General Chemistry Laboratory ...........................................3  
|                  | ENG 102 Writing II .........................................................................4  
|                  | MA 114 Calculus II .........................................................................4  
|                  | University Studies (VIII) ................................................................3  

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*CONTINUED*
## Sophomore Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 226 Analytical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHE 230 Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>MA 213 Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>PHY 231 General University Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHY 241 General University Physics Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

**Second Semester**

| CHE 231 Organic Chemistry Laboratory | 2 |
| CHE 232 Organic Chemistry II | 3 |
| MA 322 Matrix Algebra and Its Applications | 3 |
| PHY 232 General University Physics | 4 |
| PHY 242 General University Physics Laboratory | 1 |
| University Studies (IX) | 3 |

## Junior Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 547 Principles of Physical Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHE 532 Spectrometric Identification of Organic Compounds</td>
<td>2</td>
</tr>
<tr>
<td>COM 199 Presentational Communication Skills*</td>
<td>1</td>
</tr>
<tr>
<td>Foreign Language I*</td>
<td>4</td>
</tr>
<tr>
<td>University Studies (VII)</td>
<td>3</td>
</tr>
<tr>
<td>University Studies (X)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Second Semester**

| CHE 572 Seminar** | 1 |
| Foreign Language IV* | 3 |
| Major Field Option | 3 |
| Free Electives | 6 |

*Any foreign language sequence satisfying the College of Arts and Sciences requirement in foreign languages may be taken. German is recommended.

**COM 199 and two credits of CHE 572 satisfy the University Studies requirement for Oral Communication.

## Certification Requirements

The B.S. degree is certified by the American Chemical Society.