### CHEMISTRY, B.S. - ENVIRONMENTAL OPTION

#### Major in Chemistry, BS

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Credits Required for Major</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minimum GPA 2.0 for Major</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minimum credits for 50% residency</td>
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</tbody>
</table>

CHEM 188 WAIVED FOR RETURNING STUDENTS

#### 100 AND 200 LEVEL CHEMISTRY REQUIRED COURSES

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111</td>
<td>Introductory Chemistry 1 (C minimum)</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 112</td>
<td>Introductory Chemistry 2 (C minimum)</td>
<td></td>
</tr>
<tr>
<td>CHEM 231</td>
<td>Organic Chemistry 1 (C minimum)</td>
<td></td>
</tr>
<tr>
<td>CHEM 232</td>
<td>Organic Chemistry 2 (C minimum)</td>
<td></td>
</tr>
<tr>
<td>CHEM 251</td>
<td>Inorganic Chemistry 1 (C minimum)</td>
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</tr>
<tr>
<td>CHEM 265</td>
<td>Quantitative Analysis (C minimum)</td>
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#### 300 AND 400 LEVEL CHEMISTRY REQUIRED COURSES

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CHEM 341</td>
<td>Physical Chemistry 1</td>
<td></td>
</tr>
<tr>
<td>CHEM 342</td>
<td>Physical Chemistry 2</td>
<td></td>
</tr>
<tr>
<td>CHEM 487</td>
<td>Seminar in Chemistry 1</td>
<td></td>
</tr>
<tr>
<td>CHEM 488</td>
<td>Seminar in Chemistry 2</td>
<td></td>
</tr>
<tr>
<td>CHEM 498</td>
<td>Independent Study</td>
<td></td>
</tr>
</tbody>
</table>

#### CHEMISTRY OPTIONS

- Option in Environmental Chemistry - See separate block
- American Chemical Society Certification - Optional - See separate block

#### American Chemical Society Certification - Optional

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 326</td>
<td>Biochemistry 1</td>
<td>0</td>
</tr>
<tr>
<td>CHEM 392</td>
<td>Advanced Laboratory 2</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 489</td>
<td>Honors Course</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 498</td>
<td>Independent Study</td>
<td></td>
</tr>
<tr>
<td>CHEM 499</td>
<td>Departmental Honors</td>
<td></td>
</tr>
</tbody>
</table>

#### REQUIRED COURSES FOR ACS CERTIFICATION

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 326</td>
<td>Biochemistry 1</td>
<td></td>
</tr>
<tr>
<td>CHEM 392</td>
<td>Advanced Laboratory 2</td>
<td></td>
</tr>
<tr>
<td>CHEM 489</td>
<td>Honors Course</td>
<td></td>
</tr>
<tr>
<td>CHEM 498</td>
<td>Independent Study</td>
<td></td>
</tr>
<tr>
<td>CHEM 499</td>
<td>Departmental Honors</td>
<td></td>
</tr>
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</table>

#### RECOMMENDED COURSES FOR ACS CERTIFICATION

- Introductory Economics - Optional Recommended
- Elementary Language German or Russian - Optional Recommended

#### Total Hours: 5

### Option in Environmental Chemistry, BS

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 375</td>
<td>Environmental Chemistry</td>
<td>0</td>
</tr>
<tr>
<td>CHEM 465</td>
<td>Analytical Chemistry</td>
<td>0</td>
</tr>
<tr>
<td>CHEM 476</td>
<td>Environmental Chemistry 2</td>
<td>0</td>
</tr>
<tr>
<td>Chemistry Electives - Choose 5 hours from:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 300</td>
<td>Co-Op Ed Experience in Chem</td>
<td></td>
</tr>
<tr>
<td>CHEM 312</td>
<td>Chemistry in Nanotechnology</td>
<td></td>
</tr>
<tr>
<td>CHEM 324</td>
<td>Plant Biochemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 326</td>
<td>Biochemistry 1</td>
<td></td>
</tr>
<tr>
<td>CHEM 327</td>
<td>Biochemistry 2</td>
<td></td>
</tr>
<tr>
<td>CHEM 328</td>
<td>Analytical Biochemistry Lab</td>
<td></td>
</tr>
<tr>
<td>CHEM 381</td>
<td>Polymer Chemistry 1</td>
<td></td>
</tr>
</tbody>
</table>

### Mathematics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MATH 161</td>
<td>Calculus 1</td>
<td>4</td>
</tr>
<tr>
<td>MATH 163H</td>
<td>Honors Calculus 1</td>
<td>4</td>
</tr>
<tr>
<td>MATH 211</td>
<td>Calculus 2</td>
<td>4</td>
</tr>
<tr>
<td>MATH 311</td>
<td>Calculus 3</td>
<td>4</td>
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</tbody>
</table>

### Physics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 231</td>
<td>Physics 1 with Calculus</td>
<td>0</td>
</tr>
<tr>
<td>PHYS 232</td>
<td>Physics 2 with Calculus</td>
<td>0</td>
</tr>
</tbody>
</table>

### Biology Competency

- Competency may be demonstrated with credits earned for BIOL 100 through any of the following: 1) a successful score on either the national AP Biology exam or the Biology CLEP exam. 2) a passing grade for General Biology (BIOL 100) or equivalent.

### Environmental Chemistry Related Directed Electives

- undefined - Choose 2 of the following: 0-8
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 211</td>
<td>Concepts of Zoology</td>
</tr>
<tr>
<td>BIOL 221</td>
<td>Concepts of Botany</td>
</tr>
<tr>
<td>BIOL 241</td>
<td></td>
</tr>
<tr>
<td>BIOL 340</td>
<td>Prosptv in Environm Awareness</td>
</tr>
<tr>
<td>BIOL 343</td>
<td>Principles of Ecology &amp; Evolution</td>
</tr>
<tr>
<td>ESCI 245</td>
<td>Environmental Meteorology</td>
</tr>
<tr>
<td>ESCI 322</td>
<td>Environmental Hydrology</td>
</tr>
<tr>
<td>ESCI 349</td>
<td>Chemistry of the Atmosphere</td>
</tr>
<tr>
<td>ESCI 426</td>
<td>Groundwater Resources and Contamination</td>
</tr>
<tr>
<td>GEOG 202</td>
<td>Environmental Sustainability</td>
</tr>
<tr>
<td>GEOG 230</td>
<td>Physical Geography</td>
</tr>
<tr>
<td>GEOG 304</td>
<td>Water Resources Management</td>
</tr>
<tr>
<td>OSEH 321</td>
<td>Environmental &amp; Industrial Hygiene I - Chemical</td>
</tr>
<tr>
<td></td>
<td>and Biological Hazards</td>
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<tr>
<td>OSEH 422</td>
<td>Environmental &amp; Industrial Health II - Physical</td>
</tr>
<tr>
<td></td>
<td>Hazards</td>
</tr>
<tr>
<td>OSEH 435</td>
<td>Environmental Health</td>
</tr>
</tbody>
</table>

Other relevant environmental courses may also be selected by consulting with your academic advisor and submitting an exception to graduation requirements. A related minor may be earned by completing the minor requirements that include courses from the disciplines above.

**Total Hours** 12-21