# Chemistry and Science Education Grades 4-12, Major

## Major in Chemistry and Science Education Grades 4–12

College of Education students majoring in Middle/Secondary Education must complete the following courses for licensure by the Wisconsin Department of Public Instruction to teach middle school and high school science.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Chemistry Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 1013</td>
<td>General Chemistry 1 for Majors</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 1001</td>
<td>General Chemistry 1</td>
<td></td>
</tr>
<tr>
<td>CHEM 1014</td>
<td>General Chemistry 2 for Majors</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 1002</td>
<td>General Chemistry 2</td>
<td></td>
</tr>
<tr>
<td>CHEM 2113</td>
<td>Organic Chemistry for Majors 1</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 2111</td>
<td>Organic Chemistry 1</td>
<td></td>
</tr>
<tr>
<td>CHEM 2114</td>
<td>Organic Chemistry for Majors 2</td>
<td>4</td>
</tr>
<tr>
<td>or CHEM 2112</td>
<td>Organic Chemistry 2</td>
<td></td>
</tr>
<tr>
<td>CHEM 3201</td>
<td>Foundations of Analytical Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 4431</td>
<td>Physical Chemistry: Fundamentals with Applications in Biological Sciences</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry Electives: Choose two additional Chemistry courses.</td>
<td>6-8</td>
<td></td>
</tr>
</tbody>
</table>

| Required Cognate Courses                        |       |
| BIOL 1001 | General Biology 1                               | 3     |
| BIOL 1002 | General Biology 2                               | 3     |
| MATH 1450 | Calculus 1                                      | 4     |
| or MATH 1410 | Calculus for the Biological Sciences           |       |
| PHYS 1001 | General Physics 1                               | 4     |
| or PHYS 1003 | General Physics with Introductory Calculus 1    |       |
| or PHYS 1013 | Classical and Modern Physics with Calculus 1    |       |
| PHYS 1002 | General Physics 2                               | 4     |
| or PHYS 1004 | General Physics with Introductory Calculus 2    |       |
| or PHYS 1014 | Classical and Modern Physics with Calculus 2    |       |
| PHYS 1009 | Earth and Environmental Physics                 | 3     |

**Total Credit Hours:** 50-52

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1. Suggested electives include CHEM 4530 Biochemistry 1: Macromolecular Structure and Function or BIOL 3101 Biochemistry and the Molecular Basis of Biology, CHEM 3210 Advanced Methods and Instrumentation for Chemical Analysis, CHEM 4130 Characterization of Organic Compounds, CHEM 4230 Forensic Chemistry, CHEM 4630 Introduction to Polymer Science, CHEM 4956 Undergraduate Research in Chemistry and CHEM 4995 Independent Study in Chemistry.

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