### CHEMISTRY, A.C.S., BIOCHEMISTRY EMPHASIS, COMPREHENSIVE MAJOR

(Code 100-009)

#### University Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>GRADUATION REQUIREMENTS FOR BACCALAUREATE DEGREE</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Credit Requirements</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minimum total for graduation</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>Upper division credits (courses numbered 300 and higher)</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Liberal Education Core</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Academic Concentrations</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Grade Point Requirements</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2.00 average</td>
</tr>
<tr>
<td></td>
<td>Resident</td>
<td>2.00 average</td>
</tr>
<tr>
<td></td>
<td>Major</td>
<td>2.00 average</td>
</tr>
<tr>
<td></td>
<td>Minor</td>
<td>2.00 average</td>
</tr>
<tr>
<td></td>
<td>Certificate</td>
<td>2.00 average</td>
</tr>
<tr>
<td></td>
<td><strong>University Residency Requirements</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minimum total</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Senior year</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Major, Standard, upper division in residence</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Major, Comprehensive, upper division in residence</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Certificate</td>
<td>25 percent of credits</td>
</tr>
<tr>
<td></td>
<td><strong>Procedures Required for Graduation</strong></td>
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</tr>
<tr>
<td></td>
<td>Obtain admission to the degree program and/or the College offering it.</td>
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</tr>
<tr>
<td></td>
<td>Apply for graduation on CampS.</td>
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<tr>
<td></td>
<td><strong>Liberal Education Core</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The University of Wisconsin-Eau Claire measures learning outcomes to ensure that its graduates have achieved a liberal education and prepared themselves to contribute to a complex society. Upon graduation, each undergraduate will have met the four learning goals of our liberal education core and the 11 learning outcomes they comprise.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Knowledge Goal</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Knowledge Outcome 1 (K1): Natural Sciences</td>
<td>Two (2) learning experiences</td>
</tr>
<tr>
<td></td>
<td>Knowledge Outcome 2 (K2): Social Sciences</td>
<td>Two (2) learning experiences</td>
</tr>
<tr>
<td></td>
<td>Knowledge Outcome 3 (K3): Humanities</td>
<td>Two (2) learning experiences</td>
</tr>
<tr>
<td></td>
<td>Knowledge Outcome 4 (K4): Fine Arts</td>
<td>One (1) learning experience</td>
</tr>
<tr>
<td></td>
<td><strong>Skills Goal</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skills Outcome 1 (S1): Written and Oral Communication</td>
<td>Two (2) learning experiences</td>
</tr>
<tr>
<td></td>
<td>Skills Outcome 2 (S2): Mathematics</td>
<td>One (1) learning experience</td>
</tr>
<tr>
<td></td>
<td>Skills Outcome 3 (S3): Creativity</td>
<td>One (1) learning experience</td>
</tr>
<tr>
<td></td>
<td><strong>Responsibility Goal</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Responsibility Outcome 1 (R1): Equity, Diversity, and Inclusivity</td>
<td>Two (2) learning experiences</td>
</tr>
<tr>
<td></td>
<td>Responsibility Outcome 2 (R2): Global Perspectives</td>
<td>One (1) learning experience</td>
</tr>
<tr>
<td></td>
<td>Responsibility Outcome 3 (R3): Civic and Environmental Issues</td>
<td>One (1) learning experience</td>
</tr>
<tr>
<td></td>
<td><strong>Integration Goal</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Integration Outcome 1 (I1): Integration</td>
<td>Two (2) learning experiences</td>
</tr>
<tr>
<td></td>
<td><strong>Service-Learning Goal</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Service-Learning</td>
<td>30 hours</td>
</tr>
<tr>
<td></td>
<td><strong>College Degree Requirements</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bachelor of Arts or Bachelor of Science Degree (B.A./B.S.)</td>
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<tr>
<td></td>
<td><strong>University Graduation Requirements.</strong> All candidates for degrees must fulfill the requirements for credits, curriculum, GPA, and University residency as specified in the section of this catalog titled University Graduation Requirements.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>College Graduation Requirements: Grade Point Averages.</strong> All candidates for degrees in the College of Arts and Sciences must earn minimum resident and total GPAs of 2.00 in the major, the minor, and the certificate. The resident and total GPAs for the major are computed using all attempted credits applicable to the major including those offered by departments other than the major.</td>
<td></td>
</tr>
</tbody>
</table>
department. The resident and total GPAs for the minor and the certificate are computed similarly.

**Major-Minor and Major-Certificate Requirements.** A standard major (a minimum of 36 credits) must be supplemented by a minor (a minimum of 24 credits) or by a certificate (12 to 18 credits) to meet graduation requirements for completing a first and second degree program. No minor or certificate is required with a Comprehensive Major (60 or more credits) or with two majors of 36 or more credits each.

Certain degree programs which include Comprehensive Majors may require more than the minimum of 120 credits for graduation.

Acceptable academic program combinations are determined at the college level. A major and a minor or a major and certificate or two majors (if available) may not be elected in the same department or program, except in the approved combinations listed here.

**College Credits.** Earn at least 90 credits in courses offered by the College of Arts and Sciences.

### Bachelor of Arts Degree in the College of Arts and Sciences (B.A.)

Fulfillment of all University Graduation Requirements (which includes the Liberal Education Core); all College-level degree requirements (major and minor/certificate emphases, GPAs, earning at least 90 credits in Arts and Sciences course work); foreign language competency at the 102 level. Foreign language competency may be met in one of two ways: (1) Achieve a score on the foreign language placement test that qualifies the student to enter the 201-level course in a foreign language. (2) Earn a grade of at least C (not C-) or a mark of S in a 102-level foreign language course (or AIS 112 or AIS 122/ LANG 122 or CSD 103).

### Bachelor of Science Degree in the College of Arts and Sciences (B.S.)

Fulfillment of all University Graduation Requirements (which includes the Liberal Education Core); all College-level degree requirements (major and minor/certificate emphases, GPAs, earning at least 90 credits in Arts and Sciences course work); mathematics competency at the MATH 111, MATH 112 or MATH 113 level. Mathematics competency can be met in one of three ways: (1) Achieve a score on the mathematics placement test that qualifies the student to enter the MATH 114 course. (2) Earn a grade of at least C (not C-) or a mark of S in a 102-level foreign language course (or AIS 112 or AIS 122/ LANG 122 or CSD 103).

### Major Requirements

The biochemistry emphasis major is good preparation for students planning graduate study in biochemistry, biophysics or medicinal chemistry. In addition, this emphasis provides an exceptionally rigorous pre-medical or pre-pharmacy program with suitable biology electives.

### Core Requirements for A.C.S., Liberal Arts and Teaching Chemistry Majors

A minimum of sixty-one semester credits, including:

**Chemistry Core**

Select one of the following: 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 115</td>
<td>Chemical Principles</td>
<td>6</td>
</tr>
<tr>
<td>CHEM 103</td>
<td>General Chemistry I</td>
<td></td>
</tr>
<tr>
<td>&amp; CHEM 104</td>
<td>and General Chemistry II</td>
<td></td>
</tr>
</tbody>
</table>

**Additional Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 213</td>
<td>Quantitative Analysis</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 218</td>
<td>Introduction to Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 325</td>
<td>Organic Chemistry I with Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 326</td>
<td>Organic Chemistry II with Laboratory</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total Credits**

39

1 Only six credits of the CHEM 103/214 or CHEM 105/216/217 sequence are credited to the major.

### Capstone Experience for Chemistry Majors

The capstone experience is met by completing CHEM 411 for chemistry with business emphasis majors, and by CHEM 420, CHEM 438, CHEM 453 or CHEM 497 for other chemistry majors.

### Comprehensive Major: Chemistry, A.C.S., Biochemistry Emphasis

**Requirements**

In addition to the chemistry core and required mathematics/physics courses, students must complete the following course work:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 433</td>
<td>Physical Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 452 &amp; CHEM 453 &amp; CHEM 454</td>
<td>Biochemistry I and Biochemistry Laboratory and Biochemistry II</td>
<td>8</td>
</tr>
<tr>
<td>CHEM 420 &amp; CHEM 438</td>
<td>Advanced Synthesis Laboratory and Physical Analysis Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 318 or CHEM 361</td>
<td>Bioinorganic Chemistry or Molecules and Medicine</td>
<td>3</td>
</tr>
</tbody>
</table>

**Elective(s)**

Select a minimum of 3 credits:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 304</td>
<td>Environmental Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 318</td>
<td>Bioinorganic Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 361</td>
<td>Molecules and Medicine</td>
<td></td>
</tr>
<tr>
<td>CHEM 397</td>
<td>Chemical Literature and Communication</td>
<td></td>
</tr>
<tr>
<td>CHEM 399</td>
<td>Independent Study - Juniors</td>
<td></td>
</tr>
<tr>
<td>CHEM 401</td>
<td>Inorganic Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 411</td>
<td>Survey of Industrial Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 426</td>
<td>Modern Organic Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 444</td>
<td>Modern Applied Separations and Spectrometry</td>
<td></td>
</tr>
<tr>
<td>CHEM 460</td>
<td>Polymer Chemistry</td>
<td></td>
</tr>
<tr>
<td>CHEM 491</td>
<td>Special Topics</td>
<td></td>
</tr>
<tr>
<td>CHEM 495</td>
<td>Directed Studies</td>
<td></td>
</tr>
<tr>
<td>CHEM 497</td>
<td>Independent Study (ACS)</td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>Title</td>
<td>Credits</td>
</tr>
<tr>
<td>------------</td>
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</tr>
<tr>
<td>CHEM 499</td>
<td>Independent Study - Seniors</td>
<td>22</td>
</tr>
</tbody>
</table>

Total Credits: 22