# Biochemistry, B.S. (120 Units)

**Valid for Catalog Years: 2018/2019 to 2021/2022**

*Official planning guide approved by the College of Science & Math*

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Units</strong></td>
<td><strong>Fall</strong></td>
<td><strong>Spring</strong></td>
<td><strong>Fall</strong></td>
</tr>
<tr>
<td><strong>Milestones</strong></td>
<td>CHEM 1A and 1AL</td>
<td>CHEM 1B and 1BL Major Advising</td>
<td>CHEM 128A MATH 75</td>
</tr>
<tr>
<td><strong>General Education</strong></td>
<td>A1 (3 Units) Oral Communication <em>Must pass with a C or better</em>*</td>
<td>A3 (3 Units) Critical Thinking <em>Must pass with a C or better</em>*</td>
<td>C1 (3-4 Units) Arts</td>
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<td>A2 (3 Units) Written Communication <em>Must pass with a C or better</em>*</td>
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<td></td>
<td>D1 (3 Units) American History</td>
<td>C1/C2 (3-4 Units) Arts or Humanities</td>
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<tr>
<td><strong>Major</strong></td>
<td>GE Area B1 CHEM 1A (3 Units) Physical Sciences [Pre-Req: High school chemistry. May be taken concurrently: GE B4; CHEM 1AL] <em>Not open to students with credit in CHEM 1B</em>*</td>
<td>CHEM 1B (3 Units) [Pre-Req: CHEM 1A &amp; 1AL (both passed with a C or better); CHEM 1BL (may be taken concurrently)]</td>
<td>GE Area B2 BIOL 1A (4 Units) Life Sciences</td>
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<tr>
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<td>GE Area B3 CHEM 1AL (2 Units) Lab [Pre-Req: CHEM 1A (may be taken concurrently)]</td>
<td>CHEM 1BL (2 Units) [Pre-Req: CHEM 1B or 8 (C or better) or instructor permission]</td>
<td>CHEM 128A (3 Units) [Pre-Req: CHEM 1B, 8, or 128A; PHYS 2B or 4B; MATH 77 &amp; PHYS 4C recommended]</td>
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</tbody>
</table>

For assistance or to schedule an advising appointment, please contact the CSM Advising and Resources Center at 559-278-4150, Science I 136

Department of Chemistry: 559-278-2103, Science I 380

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Revised 2/2022
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## Major

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<th>Fall</th>
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<tbody>
<tr>
<td>GE Area B4 MATH 75 (4 Units)</td>
<td>MATH 76 (4 Units) [Pre-Req: MATH 75 or MATH 75A &amp; B]</td>
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<td>PHYS 2B (4 Units) [Pre-Req: PHYS 2A]</td>
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<td>CHEM 128B (3 Units) [Pre-Req: CHEM 128A (C or better)]</td>
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<td>CHEM 129B (2 Units) [Pre-Req: CHEM 129A; CHEM 128B (may be taken concurrently)]</td>
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<td>CHEM 156 (3 Units) [Pre-Req: Senior standing or instructor permission; CHEM 150, 155, or 155A (CHEM 155A may be taken concurrently); CHEM 102 or 105, 129A; UDWS]</td>
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<tr>
<td>PHYS 2A (4 Units) [Pre-Req: DS 71, MATH 75, MATH 70, or department permission]</td>
<td>CHEM 129A (2 Units) [Pre-Req: CHEM 8 or 128A (C or better; may be taken concurrently)]</td>
</tr>
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<td>CHEM 155A (3 Units) [Pre-Req: CHEM 128B]</td>
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## Additional Graduation Requirements

<table>
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<tr>
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<th>Spring</th>
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<tbody>
<tr>
<td>UDWS (0-4 Units) *Upper Division Writing Exam OR &quot;W&quot; Course (must pass with a C or better)</td>
<td>MI (3 Units) Multicultural/International</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
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**FOOTNOTES:**

- **Prerequisites/Corequisites:** Other restrictions may apply. Please see your course catalog for detailed prerequisite/corequisite requirements.
- **Grade Requirements:** Biochemistry majors may not take the following courses for CR/NC grading: BIOL 1A, 1B, 1BL, 102, 103, 104, 120; CHEM 1A, 1AL, 1B, 1BL, 102, 106, 106S, 110A, 111, 112, 123, 124, 128A, 128B, 129A, 129B, 155A, 155B, 156, 190; MATH 75, 76; PHYS 2A, 2B.
- **Electives (4 units):** Students must earn a minimum of 120 units total to graduate. The number of required elective units may vary, depending on the amount of units earned from major and GE courses.
- **Upper Division Writing Skills requirement (UDWS):** All undergraduate students must demonstrate competency in writing skills by passing the Upper Division Writing Exam (UDWE) or by obtaining a C or better in an approved upper division writing course, identified by the letter "W."
- **Substitutions:** If substitutions/exceptions/waivers are made for any major courses that also meet GE and/or the Multicultural/International graduation requirement, the student is responsible for completing additional courses to satisfy the respective areas (GE and/or MI). This also includes the upperdivision writing requirement.
## Biochemistry, B.S. (120 Units)

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<th>Units</th>
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<td>29-35</td>
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### Milestones
- **CHEM 1A and 1AL**
- **CHEM 1B and 1BL Major Advising**
- **CHEM 128A MATH 75**
- **CHEM 128B BIOL 1A**
- **UDWS BIOL 1B and 1BL PHYS 2A Major Advising**
- **CHEM 102 BIOL 102**
- **CHEM 106(S) CHEM 110A CHEM 155A**

### General Education
#### A1 (3 Units)
- Oral Communication
  - *Must pass with a C or better*

#### A3 (3 Units)
- Critical Thinking
  - *Must pass with a C or better*

#### C1 (3-4 Units)
- Arts

#### C2 (3-4 Units)
- Humanities

#### C1/C2 (3-4 Units)
- Arts or Humanities

#### D1 (3 Units)
- American History

#### D2 (3 Units)
- American Government

#### D3 (3 Units)
- Social Science

#### IB (3 Units)
- Physical Universe & Its Life Forms

#### MI (3 Units)
- Multicultural/International

#### IC (3-4 Units)
- Arts & Humanities

### Major
#### GE Area B1
- **CHEM 1A (3 Units)**
  - Physical Sciences
  - [Pre-Req: High school chemistry. May be taken concurrently: GE B4; CHEM 1AL]
  - *Not open to students with credit in CHEM 1B*

#### GE Area B2
- **CHEM 1B (3 Units)**
  - [Pre-Req: CHEM 1A & 1AL (both passed with a C or better); CHEM 1BL (may be taken concurrently)]

#### GE Area B3
- **CHEM 1BL (2 Units)**
  - Lab
  - [Pre-Req: CHEM 1A (may be taken concurrently)]

#### CHEM 128A
- **(3 Units)**
  - [Pre-Req: CHEM 1B or 8 (C or better) or instructor permission]

#### BIOL 1B
- **(1 Unit)**
  - [Pre-Req: BIOL 1A; first-time enrollees must take BIOL 1BL concurrently]

#### CHEM 111 (3 Units)
- **CHEM 112 (5 Units)**
  - [Pre-Req: CHEM 108 or 110A]

#### CHEM Courses
- **(4-7 Units)**
  - Select TWO courses from the following:
    - CHEM 106, 106S, 111, 123, 124, 190, or other approved courses
  - *See course catalog for prerequisite requirements*

#### BIOL Courses
- **(6-7 Units)**
  - Select TWO courses from the following:
    - BIOL 102, 103, 104, 120, or other approved courses
  - *See course catalog for prerequisite requirements*
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### Major

**GE Area B4**

- **MATH 75**
  - 4 Units
  - Quantitative Reasoning

  *See course catalog for prerequisite requirements*

**MATH 76**

- 4 Units
- [Pre-Req: MATH 75 or MATH 75A & B]

**PHYS 2B**

- 4 Units
- [Pre-Req: PHYS 2A]

**CHEM 128B**

- 3 Units
- [Pre-Req: CHEM 128A (C or better)]

**CHEM 129B**

- 2 Units
- [Pre-Req: CHEM 129A; CHEM 128B (may be taken concurrently)]

**CHEM 156**

- 3 Units
- [Pre-Req: Senior standing or instructor permission; CHEM 150, 155, or 155A (CHEM 155A may be taken concurrently); CHEM 102 or 105, 129A; UDWS]

**PHYS 2A**

- 4 Units
- [Pre-Req: DS 71, MATH 75, MATH 70, or department permission]

**CHEM 129A**

- 2 Units
- [Pre-Req: CHEM 8 or 128A (C or better; may be taken concurrently)]

**CHEM 155A**

- 3 Units
- [Pre-Req: CHEM 128B]

**Electives**

- UDWS (0-4 Units)
  - *Upper Division Writing Exam OR "W" Course (must pass with a C or better)

### Elective

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