Biochemistry and Molecular Biology

Department Information

- **Department Location:** Ladd Hall
- **Department Phone:** 701-231-8694
- **Department Email:** ndsu.chemistry@ndsu.edu
- **Department Web Site:** www.ndsu.edu/chemistry/
- **Credential Offered:** B.S.; B.A.
- **Plan Of Study Sample:** bulletin.ndsu.edu/programs-study/undergraduate/biochemistry-molecular-biology/#planofstudytext

Major Requirements

**Major: Biochemistry & Molecular Biology**

**Degree Type:** B.A. or B.S.

**Minimum Degree Credits to Graduate:** 120

**University Degree Requirements**

1. Satisfactory completion of all requirements of the curriculum in which one is enrolled.
2. Earn a minimum total of 120 credits in approved coursework. Some academic programs exceed this minimum.
3. Satisfactory completion of the general education requirements as specific by the university.
4. A minimum institutional GPA of 2.00 based on work taken at NDSU.
5. At least 36 credits presented for graduation must be in courses number 300 or higher.
6. Transfer Students: Must earn a minimum of 60 credits from a baccalaureate-degree granting or professional institution.
   a. Of these 60, at least 36 must be NDSU residence credits as defined in #7.
   b. Within the 36 resident credits, a minimum of 15 must be in courses numbered 300 or higher and 15 credits in the major field of study.
7. At least 36 credits must be NDSU resident credits. Residence credits include credits registered and paid for at NDSU.

For complete information, please refer to the Degree and Graduation Requirements (http://bulletin.ndsu.edu/academic-policies/undergraduate-policies/degree-and-graduation) section of this Bulletin.

**University General Education Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C</strong></td>
<td><strong>Communication</strong></td>
<td></td>
</tr>
<tr>
<td>ENGL 110</td>
<td>College Composition I</td>
<td>12</td>
</tr>
<tr>
<td>ENGL 120</td>
<td>College Composition II</td>
<td></td>
</tr>
<tr>
<td>COMM 110</td>
<td>Fundamentals of Public Speaking</td>
<td></td>
</tr>
<tr>
<td><strong>R</strong></td>
<td><strong>Quantitative Reasoning</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>S</strong></td>
<td><strong>Science and Technology</strong></td>
<td>10</td>
</tr>
<tr>
<td><strong>A</strong></td>
<td><strong>Humanities and Fine Arts</strong></td>
<td>6</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td><strong>Social and Behavioral Sciences</strong></td>
<td>6</td>
</tr>
<tr>
<td><strong>W</strong></td>
<td><strong>Wellness</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td><strong>Cultural Diversity</strong></td>
<td></td>
</tr>
<tr>
<td><strong>G</strong></td>
<td><strong>Global Perspectives</strong></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td><strong>Credits</strong></td>
<td>39</td>
</tr>
</tbody>
</table>
May be satisfied by completing courses in another General Education category.

General education courses may be used to satisfy requirements for both general education and the major, minor, and program emphases, where applicable. Students should carefully review major requirements to determine if specific courses can also satisfy these general education categories.

- A list of university approved general education courses and administrative policies are available here (http://bulletin.ndsu.edu/academic-policies/undergraduate-policies/general-education/#genedcoursesection).

**College Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Arts (BA) Degree – An additional 12 credits Humanities and Social Sciences and proficiency at the second year level in a modern foreign language. *</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Bachelor of Science (BS) Degree – An additional 6 credits in Humanities or Social Sciences *</td>
<td></td>
<td>6</td>
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</tbody>
</table>

- Humanities and Social Sciences may be fulfilled by any course having the following prefix: ADHM, ANTH, ARCH, ART, CJ, CLAS, COMM, ECON, ENGL, FREN, GEOG, GERM, HDFS, HIST, LA, LANG, MUSC, PHIL, POLS, PSYC, RELS, SOC, SPAN, THEA, WGS, or any course from the approved list of general education courses in humanities and social sciences (general education categories A and B). These credits must come from outside the department of the student’s major.

**Major Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>BIOC 460</td>
<td>Foundations of Biochemistry and Molecular Biology I</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 460L</td>
<td>Foundations of Biochemistry I Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOC 461</td>
<td>Foundations of Biochemistry and Molecular Biology II</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 473</td>
<td>Methods of Biochemical Research</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 150 &amp; 150L</td>
<td>General Biology I and General Biology I Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 121 &amp; 121L</td>
<td>General Chemistry I and General Chemistry I Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 150 &amp; CHEM 160</td>
<td>Principles of Chemistry I and Principles of Chemistry Laboratory I</td>
<td></td>
</tr>
<tr>
<td>CHEM 122 &amp; 122L</td>
<td>General Chemistry II and General Chemistry II Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 151 &amp; CHEM 161</td>
<td>Principles of Chemistry II and Principles of Chemistry Laboratory II</td>
<td></td>
</tr>
<tr>
<td>CHEM 341</td>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 342</td>
<td>Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 353</td>
<td>Majors Organic Chemistry Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 354</td>
<td>Majors Organic Chemistry Laboratory II</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 465</td>
<td>Survey of Physical Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 380</td>
<td>Chemistry Junior Seminar</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 431</td>
<td>Analytical Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 491</td>
<td>Seminar</td>
<td>2</td>
</tr>
<tr>
<td>ENGL 321 or ENGL 324</td>
<td>Writing in the Technical Professions (May satisfy general education category C)</td>
<td>3</td>
</tr>
<tr>
<td>MATH 165</td>
<td>Calculus I (May satisfy general education category R)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 166</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MICR 350 &amp; 350L</td>
<td>General Microbiology and General Microbiology Lab</td>
<td>5</td>
</tr>
</tbody>
</table>
PHYS 251 & 251L University Physics I and University Physics I Laboratory (May satisfy general education category S) 5
PHYS 252 & 252L University Physics II and University Physics II Laboratory (May satisfy general education category S) 5
STAT 330 Introductory Statistics (May satisfy general education category R) 3
BIOL 315 Genetics 3
or PLSC 315 Genetics 3
Upper-Level Science Electives 300-400 level courses in BIOL, BIOC, BOT, ZOO, CHEM, CSCI, MICR, PSCI, PHYS, PPTH, or STAT. No more than 6 credits from one prefix may apply. Research credits (CHEM 494/BIOC 494) may count towards 3 of these credits. 9
Total Credits 91

Degree Notes:
• Except for courses offered only as pass/fail grading, no course may be taken Pass/Fail.

Minor Requirements
Biochemistry Minor
Minor Requirements
Required Credits: 16

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Required Courses</td>
<td></td>
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<tr>
<td></td>
<td>All minor courses must be selected in consultation with a Biochemistry adviser.</td>
<td>16</td>
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<tr>
<td></td>
<td>Total Credits</td>
<td>16</td>
</tr>
</tbody>
</table>

Minor Requirements and Notes
• A minimum of 8 credits must be taken at NDSU.
• The student and adviser will complete a substitution form with the courses to be used for the biochemistry minor. This form will also require the signature of the department chairperson before being submitted to the Office of Registration and Records for verification of minor program completion.
• Note: This minor will not be available for view in the Student Advisement/Requirement Report in Campus Connection.