# Biochemistry and Molecular Biology Major

## Major Requirements

```
Degree Type: B.A. or B.S.
Minimum Credits Required: 120
```

### University Degree Requirements

For complete details on these and other university degree requirements, refer to the Degree and Graduation Requirements (http://catalog.ndsu.edu/academic-policies/undergraduate-policies/degree-and-graduation/) section in the University Catalog.

1. Minimum of 120 semester credits (some programs may exceed this minimum).
2. Complete the University General Education requirements.
3. Minimum institutional GPA of 2.00 based on work taken at NDSU.
4. Minimum of 30 credits in resident at NDSU.
5. Minimum of 36 upper level credits (courses numbered 300 or higher).
6. Students with transfer credit must meet the NDSU 30 credits in residence (#4). Of these 30 credits in residence, a minimum of 15 credits must be in courses numbered 300 or above, and 15 credits must be in the student's declared major curricula.

### University General Education Requirements

A list of university approved general education courses along with the administrative policies governing the requirement and the categories is available here (http://catalog.ndsu.edu/academic-policies/undergraduate-policies/general-education/).

| Code | Title | Credits |
|---|---|---|
| **Category C: Communication** | | **12** |
| **Category R: Quantitative Reasoning** | | **3** |
| **Category S: Science and Technology** | | **10** |
| **Category A: Humanities and Fine Arts** | | **6** |
| **Category B: Social and Behavioral Sciences** | | **6** |
| **Category W: Wellness** | | **2** |
| **Category D: Cultural Diversity** | | |
| **Category G: Global Perspectives** | | |
| **Category L: Digital Literacy** | | |
| **Total Credits** | | **39** |

### Major Requirements

| Code | Title | Credits |
|---|---|---|
| **Biochem & Molecular Biology Requirements** | | |
| BIOC 460 | Foundations of Biochemistry and Molecular Biology I [2] | 3 |
| BIOC 460L | Foundations of Biochemistry I Laboratory | 1 |
| BIOC 461 | Foundations of Biochemistry and Molecular Biology II [2] | 3 |
| BIOC 473 | Methods of Biochemical Research [2] | 4 |
| BIOC 474 | Methods of Recombinant DNA Technology [2] | 3 |
| BIOC 483 | Cellular Signal Transduction Processes and Metabolic Regulations [2] | 3 |
| BIOC 487 | Molecular Biology of Gene Expression | 3 |
| BIOL 150<br>& 150L | General Biology I<br>and General Biology I Laboratory | 4 |
| BIOL 151<br>& 151L | General Biology II<br>and General Biology II Laboratory | 4 |
| CHEM 121<br>& 121L | General Chemistry I<br>and General Chemistry I Laboratory [1] | 4 |
| CHEM 122<br>& 122L | General Chemistry II<br>and General Chemistry II Laboratory [1] | 4 |
| CHEM 341<br>& 341L | Organic Chemistry I<br>and Organic Chemistry I Laboratory | 4 |

| | | |
|---|---|---|
| CHEM 342<br>& 342L | Organic Chemistry II<br>and Organic Chemistry II Laboratory | 4 |
| CHEM 380 | Chemistry and Biochemistry Junior Seminar | 1 |
| CHEM 431 | Analytical Chemistry I | 3 |
| CHEM 491 | Seminar | 2 |
| ENGL 321 | Writing in the Technical Professions | 3 |
| or ENGL 324 | Writing in the Sciences | |
| MATH 165 | Calculus I | 4 |
| MICR 350<br>& 350L | General Microbiology<br>and General Microbiology Lab | 5 |
| PHYS 211<br>& 211L | College Physics I<br>and College Physics I Laboratory | 4 |
| PHYS 212<br>& 212L | College Physics II<br>and College Physics II Laboratory | 4 |
| STAT 330 | Introductory Statistics | 3 |
| BIOL 315 | Genetics | 3 |
| or PLSC 315 | Genetics | |
| **STEM Electives** | | |
| Select any level course from the following prefixes: ANSC, BIOL, BIOC, BOT, CE, CHEM, CSCI, ECE, IME, MATH, ME, MICR, PSCI, PHYS, PPTH, or STAT. | | 6-8 |
| **Science Electives (300-400 Level)** | | |
| Select 300-400 level courses from the following prefixes: ANSC, BIOL, BIOC, BOT, CHEM, CSCI, MICR, PSCI, PHYS, PPTH, or STAT. No more than 6 credits from one prefix may apply. Research credits (CHEM 494/BIOC 494; CHEM 493/BIOC 493) may count towards 3 of these credits. | | 9 |
| **Total Credits** | | **91-93** |

1 Students may take the higher level CHEM 150/160 for CHEM 121/121L and CHEM 151/161 for CHEM 122/122L.

2 Students in the accelerated program may substitute the 600 level course equivalent to use in both the undergraduate and graduate degree programs. No more than 15 credits of 600 level coursework can apply to the undergraduate degree program.

## Degree and Program Notes:

- Except for courses offered only as pass/fail grading, no course may be taken Pass/Fail.
- This major is eligible as an accelerated program for the student to earn a B.S. in Biochemistry & Molecular Biology and a M.S. in Biochemistry. Students may complete either a thesis or non-thesis option in the master's program.