### Biology Major:
#### Cellular and Molecular Concentration - Bachelor of Arts (BA)

**Major requirements**

(All colleges, excluding teacher certification programs)

39 credits (71 total credits including CHM and MTH requirements)

Each student must have a minimum of three 400 level BIO credits (excluding BIO 450, 479, 491, 495, and 499) to fulfill requirements of the major.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 105</td>
<td>General Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIO 203</td>
<td>Organismal Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIO 306</td>
<td>Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BIO 307</td>
<td>Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BIO 315</td>
<td>Cell Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIO 435</td>
<td>Molecular Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIO 436</td>
<td>Molecular Biology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>or BIO 468</td>
<td>Human Molecular Genetics Lab</td>
<td></td>
</tr>
<tr>
<td>BIO 440</td>
<td>Bioinformatics</td>
<td>2</td>
</tr>
<tr>
<td>BIO 491</td>
<td>Capstone Seminar in Biology</td>
<td>1</td>
</tr>
</tbody>
</table>

**Electives**

Select 13 credits of electives from the following:

1. BIO 202 Introduction to Biological Data Analysis and Interpretation
2. BIO 303 Vertebrate Form and Function
2. BIO 312 Human Anatomy and Physiology I
2. BIO 313 Human Anatomy and Physiology II
2. BIO 333 Radiation Biology
2. BIO 337 Plant Physiology
2. BIO 406 Parasitology
2. BIO 408 Developmental Biology
2. BIO 410 Human Cadaver Dissection
2. BIO 412 Mycology
2. BIO 424 Human Endocrinology
2. BIO 428 Advanced Nutrition for the Health Professions
2. BIO 429 Evolution
2. BIO 432 Biology of Cancer
2. BIO 436 Molecular Biology Laboratory
2. BIO 443 Molecular Mechanism of Disease and Drug Action
2. BIO 449 Advanced Microscopy and Biological Imaging
2. BIO 466 Human Molecular Genetics
2. BIO 468 Human Molecular Genetics Lab
2. MIC 230 Fundamentals of Microbiology
2. MIC 310 Immunology
2. MIC 410 Immunology Laboratory
2. MIC 420 Introductory Virology
2. MIC 421 Virology Laboratory

**Chemistry requirement**

Select a minimum of 24 chemistry credits including:

- CHM 103 General Chemistry I
- CHM 104 General Chemistry II
- CHM 301 Analytical Chemistry

One organic chemistry option:

Option 1:
- CHM 300 Survey of Organic Chemistry

Option 2:
- CHM 303 Organic Chemistry Theory I
- & CHM 304 and Organic Chemistry Theory II
- & CHM 305 and Organic Chemistry Laboratory

And one of the following:
- CHM 325 Fundamental Biochemistry
- CHM 417 Biochemistry I: Macromolecules
- & CHM 418 and Biochemistry II: Metabolism and Genetic Information

**Math requirement**

Select a minimum of eight credits of mathematics, including the following:

- STAT 145 Elementary Statistics
- or MTH 265 Mathematical Models in Biology
- MTH 175 Applied Calculus
- or MTH 207 Calculus I

Total Credits: 71

1. Up to two credits from BIO 450, BIO 479, BIO 491, BIO 495, and BIO 499 may count toward the major.
2. A maximum of eight credits of BIO 303, BIO 312, BIO 313 can be applied to the major.

**Degree requirements**

All students must complete the general education, college core, major/ minor, and university degree requirements in order to qualify for a degree. The easiest way to track all of these requirements is to refer to the Advisement Report (AR) found in the Student Information System (WINGS) Student Center. All enrolled students have access to the AR.

- General education (http://catalog.uwlax.edu/undergraduate/generaleducation)
- College core (p. 1)
- Baccalaureate degree requirements (p. 2)

**College of Science and Health (CSH) Bachelor of Arts core requirements**

B.S. and B.A. students graduating from the College of Science and Health are required to take two natural laboratory science courses selected from the general education laboratory science category (GE 05) and/or from BIO 203, BIO 210, BIO 304, CHM 104, ESC 221, ESC 222, PHY 104 or PHY 204, and they either must take two mathematics courses or one math course and one computer science course from the math/logical systems category of the general education requirements (GE 02). One of the two science courses must be from a department outside of the student’s major department.
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Note: Math courses can be pairs, i.e. 150 and 151; MTH/CS majors can use two science courses from same department.

For the Bachelor of Arts degree, students must complete a major from the college and proficiency in a foreign language at the 202 level or an ESL proficiency score of 80 or above on the La Crosse Battery of exams for non-native speakers of English. Contact the "English as a Second Language Institute" for eligibility and regulations. Students must also complete one of the following options. It is recommended that courses are selected in consultation with your advisor.

1. Complete a minor in the College of Liberal Studies/School of Arts and Communication; or
2. Complete an individualized option, consisting of 15 credits.
   a. These courses must be from the College of Liberal Studies/ School of Arts and Communication.
   b. At least 9 credits must be earned at the 300/400 level.
   c. General education courses may apply provided they are not being used to fulfill minimum general education requirements.
   d. Internship credits may not count toward the individualized option.

Baccalaureate degree requirements

Candidates for the Bachelor of Arts or the Bachelor of Science degrees must accomplish the following:

1. Fulfill the general education requirements.
2. Complete at least one ethnic studies (diversity) course.
3. Complete the courses prescribed by the Undergraduate Curriculum Committee for the degree desired in the respective school or college. (No substitutions for graduation may be made in course requirements for a major or minor after the fourth week of the last semester of the senior year.)
4. Earn a minimum of 120 semester credits with at least a 2.00 cumulative GPA. At least 40 credits must be earned in 300/400 (senior college) level courses. Courses earned at the 100/200 level that transferred to UWL as 300/400 level courses do not apply to this requirement nor do courses from two-year schools.
5. Complete major and minor requirements with at least a 2.00 GPA in each major and minor (and concentration or emphasis, if selected).
6. A minimum of 30 semester credits in residence at UWL is required for graduation. (See undergraduate resident requirement [http://catalog.uwlax.edu/undergraduate/academicpolicies/graduation/#undergraduate-residence-requirement].)
7. Submit an application for graduation via the "Apply for Graduation" link in the WINGS Student Center as soon as the student has registered for his or her final semester or summer term in residence. December and winter intersession graduates should apply by May 1. May and summer graduates should apply by December 1.

No degree will be awarded unless all requirements are fulfilled and recorded within 30 days after the official ending date of each term.

Sample degree plan

Below is a sample degree plan that can be used as a guide to identify courses required to fulfill the major and other requirements needed for degree completion. A student's actual degree plan may differ depending on the course of study selected (second major, minor, etc.). Also, this sample plan assumes readiness for each course and/or major plan, and some courses may not be offered every term. Review the course descriptions or the class timetable (http://www.uwlax.edu/Records/regISTRATION) for course offering information.

The sample degree plans represented in this catalog are intended for first-year students entering UWL in the fall term. Students should use the Advisement Report (AR) in WINGS (https://wings.uwlax.edu/psp/cprod/?cmd=login&amp;languageCd=ENG&amp;) and work closely with their faculty advisor(s) and college dean's office to ensure declaration and completion of all requirements in a timely manner.

General Education Program

The general education curriculum (Gen Ed) is the common educational experience for all undergraduates at UWL. Sample degree plans include Gen Ed placeholders to ensure completion of the general education requirements. Courses may be rearranged to fit the needs or recommendations of the student's program of study. Gen Ed courses may be taken during winter term (January between the semesters) and summer to reduce the course load during regular terms (fall and spring). Students should consult with their advisor and/or the college academic services director in their college/school for assistance with course and schedule planning. Refer to the general education requirements (http://catalog.uwlax.edu/undergraduate/Generaleducation) for more specific details.

Note: at least 40 credits of the 120 credits required must be earned at the 300/400 level.

This sample degree plan does not establish a contractual agreement. It identifies the minimum requirements a student must successfully complete, to qualify for a degree, in a format intended to assist the student plan their academic career. Actual degree plans may differ.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 105 (Gen Ed Natural Lab Science)</td>
<td>3</td>
<td>ENG 110 or 112 (Gen Ed Literacy-Written)</td>
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</tr>
<tr>
<td>CST 110 (Gen Ed Literature-Oral)</td>
<td>4</td>
<td>BIO 203</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIS 101, 102, or ARC 200 (Gen Ed World Hist)</td>
<td>3</td>
<td>Gen Ed Self &amp; Society</td>
<td></td>
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</tr>
<tr>
<td>MTH 207 or 175 (Gen Ed Math)</td>
<td>5</td>
<td>CHM 103 (Gen Ed Natural Lab Science)</td>
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<table>
<thead>
<tr>
<th>Year 2</th>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 145 (Gen Ed Lang/Logical Systems)</td>
<td>4</td>
<td>BIO 306</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIO 307</td>
<td>3</td>
<td>CHM 300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHM 104</td>
<td>5</td>
<td>Gen Ed Minority Cultures</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Grade point average requirements for some programs will be considerably higher than 2.00. Re-entering students may be required to earn credits in excess of the 120 needed for graduation in any curriculum in order to replace credits earned in courses in which the content has changed substantially in recent years. Each case will be judged on its own merit.
### Year 3

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO Elective</td>
<td>3 BIO 315</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BIO Elective</td>
<td>3 CHM 325</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CHM 301</td>
<td>5 CSH Core (300/400 CLS elec) or CLS Minor</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Gen Ed Hum-Lit</td>
<td>3 Gen Ed Arts</td>
<td>2-3</td>
<td></td>
</tr>
<tr>
<td>Gen Ed Global Studies</td>
<td>3 Gen Ed Health &amp; Well Being</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

### Year 4

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 435</td>
<td>3 BIO 440</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>BIO 436 or 468</td>
<td>1 BIO 491</td>
<td>1</td>
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</tr>
<tr>
<td>BIO Elective</td>
<td>3 BIO Elective (400 level)</td>
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</tr>
<tr>
<td>CSH Core (300/400 CLS elec) or CLS Minor</td>
<td>3 CSH Core (300/400 CLS elec) or CLS Minor</td>
<td>3</td>
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</tr>
<tr>
<td>CSH Core or CLS Minor¹</td>
<td>3 CSH Core or CLS Minor¹</td>
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<tr>
<td>University Elective</td>
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</tbody>
</table>

### Total Credits: 120

¹ See CSH BA Core Requirements (http://catalog.uwlax.edu/undergraduate/scienceandhealth/#Core) for information on completing the individualized option. 300/400 requirements for graduation may be impacted.