

Microbiology Major: Environmental Science Concentration - Bachelor of Science (BS)

Major requirements

(All colleges)

38 credits (69 total credits including requirements outside of BIO/MIC)

Code	Title	Credits
Biology core		
BIO 105	General Biology	4
Select one of the following: ¹		3-4
BIO 203	Organismal Biology	
BIO 210	Animal Biology	
BIO 304	Plant Biology	
Microbiology core		
MIC 230	Fundamentals of Microbiology	4
MIC 350	Bacterial Diversity	3
MIC 416	Prokaryotic Molecular Genetics	4
MIC 425	Bacterial Physiology	4
MIC 434	Aquatic Microbial Ecology	3
MIC 461	Capstone in Microbiology	1
Microbiology/biology electives (see elective lists below)		11-12
Select at least five credits from List I.		
At least three credits from List II.		
A maximum of two credits from List III.		
Additional requirements		
STAT 145	Elementary Statistics	4
or STAT 245	Probability and Statistics	
MTH 175	Applied Calculus	4
or MTH 207	Calculus I	
Select a minimum of 24 credits of chemistry including:		24
CHM 103	General Chemistry I	
CHM 104	General Chemistry II	
CHM 301	Analytical Chemistry	
Select one of the following:		
CHM 300 & CHM 302	Fundamental Organic Chemistry and Fundamental Organic Chemistry Laboratory	
CHM 303 & CHM 304 & CHM 302	Organic Chemistry Theory I and Organic Chemistry Theory II and Fundamental Organic Chemistry Laboratory	
CHM 303 & CHM 304 & CHM 305	Organic Chemistry Theory I and Organic Chemistry Theory II and Organic Chemistry Laboratory	
Select one of the following:		
CHM 325	Fundamental Biochemistry	

CHM 417 & CHM 418	Biochemistry I: Macromolecules and Biochemistry II: Metabolism and Genetic Information
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Total Credits 69

¹ If three credits are chosen from this list, 12 elective credits are required below to reach a total of 38 credits for the major.

The physics series PHY 103/PHY 104 or PHY 203/PHY 204 may be required for students pursuing graduate or professional degrees.

Electives

Code	Title	Credits
List I		
MIC 407	Pathogenic Bacteriology	4
MIC 420	Introductory Virology	3
MIC 421	Virology Laboratory	2
MIC 427	Industrial and Fermentation Microbiology	3
MIC 428	Fermentation Microbiology Laboratory	2
MIC 458	Research Deconstruction	2
BIO 307	Ecology ¹	3
BIO 341	Limnology ¹	3
BIO 441	Environmental Toxicology	3
BIO 447	Standard Methods/Quality Assurance Water Analyses	3
BIO 449	Advanced Microscopy and Biological Imaging	3
BIO 464	Stream and Watershed Ecology ¹	3
List II		
BIO 406	Parasitology	4
BIO 412	Mycology	4
CLI 484	Laboratory Management	2
MIC 440	Bioinformatics	2
MIC 442	Plant Microbe Interactions	3
List III		
BIO 202	Introduction to Biological Data Analysis and Interpretation	2
MIC 479	Microbiology Laboratory Assistant (only one credit applies to List III)	1-2
MIC 489	Independent Study in Microbiology	1-2
MIC 499	Independent Research in Microbiology	1-2

¹ Only one course (3 credits) from BIO 307, BIO 341, and BIO 464 may be applied to elective requirements.

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. 2)
- Baccalaureate degree requirements (p. 2)

College of Science and Health (CSH) Bachelor of Science 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 304, BIO 210, CHM 104, GEO 221, GEO 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.

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 Science degree, in addition to all other College of Science and Health core requirements, students from non-exempted programs¹ must complete one of the following options. It is recommended that courses are selected in consultation with students' academic advisor.

1. Complete a second major; or
2. Complete a minor outside the major; or
3. Complete two certificates outside the major with at least 12 combined credits at the 300/400 level; or
4. Complete an individualized option, consisting of 18 credits
 - a. At least 12 credits must be earned at the 300/400 level outside the major department.
 - b. The remaining six credits should come from
 - i. 100 level or higher courses outside the major (General education courses may apply provided they are not being used to fulfill minimum general education requirements.); or
 - ii. 300/400 level courses inside major not being used to fulfill major requirements.
 - c. Internship credits may not count toward the individualized option.

¹ The list of exempted CSH programs is below.

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.
4. Earn a minimum of 120 semester credits with at least a 2.00 cumulative GPA.^{1,2}
5. At least 40 credits must be earned in 300/400 level courses. Transfer courses earned or transferred at the 300/400 level apply to this requirement.

6. Complete major and minor requirements with at least a 2.00 GPA^{1, 2} in each major and minor (and concentration or emphasis, if selected).
7. 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>)).
8. 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.

¹ 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.

² The grade point average recorded at the time the degree is awarded will not be affected by future enrollment.

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>) 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.

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

Note: New students and transfer students with less than 12 credits earned are required to take FYS 100 First-Year Seminar (3 cr.) during one of their first two semesters at UWL.

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 in planning their academic career. Actual degree plans may differ.

Year 1		
Fall	Credits Spring	Credits
BIO 105 (Gen Ed Natural Lab Science)	4 BIO 203	4
Gen Ed Arts	2-3 CHM 103 (Gen Ed Natural Lab Science)	5
CST 110 (Gen Ed Literacy-Oral)	3 ENG 110 or 112 (Gen Ed Literacy-Written)	3
MTH 175 or 207 (Gen Ed Math)	4 STAT 145 or 245	4
FYS 100 (Gen Ed First-Year Seminar)	3	
	16	16
Year 2		
Fall	Credits Spring	Credits
MIC 230	4 MIC 350	3
CHM 104	5 CHM 301 (or 300/400 not MIC/BIO for CSH Core)	5
Gen Ed Arts	2-3 Gen Ed Minority Cultures	3
Gen Ed Global Studies	3 Gen Ed Health & Well-Being	3
	15	14
Year 3		
Fall	Credits Spring	Credits
MIC 434 (offered fall of even-number years) or MIC Elective (see list)	3 MIC Elective (List II)	3
CHM 300 ¹	4 MIC Elective (List I)	3
CHM 302 ¹	1 CHM 325 ²	4
Gen Ed Humanistic Studies	3 Gen Ed Self & Society	3
University Elective	3 University Elective	3
	14	16
Year 4		
Fall	Credits Spring	Credits
MIC 416	4 MIC 461	1
MIC 434 (offered fall of even-number years) or MIC Elective	3 CSH Core or Minor ³	3
MIC elective (List I)	2-3 MIC 425	4
CSH Core or Minor ³	3 Gen Ed World History	3
University Elective	3 University Elective	3
	15	14
Total Credits: 120		

¹ Or CHM 303, CHM 304, and CHM 302; or CHM 303, CHM 304, and CHM 305.

² Or CHM 417 and CHM 418.

³ See CSH BS Core Requirements (<http://catalog.uwlax.edu/undergraduate/scienceandhealth/#Core>) for information on completing the individualized option. 300/400 requirements for graduation may be impacted.