

# Chemistry Major (with ACS Certification) - Bachelor of Science (BS)

The Chemistry Program at UW-La Crosse is approved by the American Chemical Society (ACS). Students completing a baccalaureate degree that meets the following ACS guidelines will receive an ACS-Certified Bachelor of Science degree in chemistry. This degree track includes the course work and experiences necessary to satisfy the requirements for ACS certification.

## Major requirements

(All colleges, excluding teacher certification programs)

45-50 credits (21 additional credits including MTH and PHY requirements)

## Core curriculum

Code	Title	Credits
CHM 103	General Chemistry I	5
CHM 104	General Chemistry II	5
CHM 271	The Chemical Community	1
CHM 301	Analytical Chemistry	5
CHM 303	Organic Chemistry Theory I	3
CHM 304	Organic Chemistry Theory II	3
CHM 305	Organic Chemistry Laboratory	2
CHM 309	Physical Chemistry Theory I	3
CHM 310	Physical Chemistry Theory II	3
CHM 313	Physical Chemistry Laboratory	2
CHM 325	Fundamental Biochemistry	4
or CHM 417	Biochemistry I: Macromolecules	
CHM 331	Fundamentals of Inorganic Chemistry	3
<b>Total Credits</b>		<b>39</b>

## Elective and laboratory requirements

Students must complete a combination of upper level elective courses in chemistry totaling at least six course credits, of which three or more credits must be comprised of "laboratory content" (see lists below).

### In-depth upper-level electives:

Code	Title	Credits
CHM 312	Atmospheric Chemistry <sup>1</sup>	
CHM 322	Chemistry of Materials <sup>2</sup>	
CHM 323	Polymer Chemistry Laboratory <sup>2</sup>	
CHM 330	Industrial Chemistry <sup>1</sup>	
CHM 403	Advanced Organic Chemistry <sup>1</sup>	
CHM 405	Advanced Organic Synthesis <sup>2</sup>	
CHM 407	Biophysical Chemistry <sup>1</sup>	
CHM 412	Aquatic and Soil Chemistry <sup>1</sup>	
CHM 413	Environmental Chemistry Laboratory <sup>2</sup>	
CHM 418	Biochemistry II: Metabolism and Genetic Information <sup>1</sup>	

CHM 419	Advanced Biochemistry Lab <sup>2</sup>
CHM 424	Spectroscopy <sup>2</sup>
CHM 431	Inorganic Synthesis and Methods <sup>2</sup>
CHM 441	Instrumental Analysis <sup>2</sup>
CHM 445	Biochemistry of Antimicrobials <sup>1</sup>
CHM 461	Nuclear Chemistry <sup>2</sup>
CHM 499	Research <sup>2</sup>

<sup>1</sup> in-depth upper-level elective

<sup>2</sup> in-depth upper-level elective with laboratory component. See list below for how many credits in this course will go toward the laboratory component.

## Courses with laboratory content:

Code	Title	Credits
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### One credit of laboratory content:

CHM 322	Chemistry of Materials
or CHM 323	Polymer Chemistry Laboratory
or CHM 424	Spectroscopy
or CHM 441	Instrumental Analysis
or CHM 461	Nuclear Chemistry

### Two credits of laboratory content:

CHM 405	Advanced Organic Synthesis
or CHM 413	Environmental Chemistry Laboratory
or CHM 419	Advanced Biochemistry Lab
or CHM 431	Inorganic Synthesis and Methods

A maximum of two credits of CHM 499 may be applied to meet the laboratory content requirement.

**In completing these degree requirements, ACS Certified Chemistry majors must experience 400+ chemistry laboratory hours beyond CHM 104.**

## Required prerequisite courses (21 credits)

Code	Title	Credits
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Select an additional 21 credits to meet prerequisites for required courses including the following:

MTH 207	Calculus I	5
MTH 208	Calculus II	4
MTH 310	Calculus III: Multivariable Calculus	4
PHY 103	Fundamental Physics I	4
or PHY 203	General Physics I	
PHY 104	Fundamental Physics II	4
or PHY 204	General Physics II	

## Exam and survey requirement

During the student's last semester on campus, completion of the following is required in order to graduate:

1. The Department of Chemistry and Biochemistry Learning Environment Survey
2. A standardized exam covering the major subject area

## 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 programs<sup>1</sup> 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.

<sup>1</sup> 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.<sup>1, 2</sup>
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<sup>1, 2</sup> 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.

<sup>1</sup> 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.

<sup>2</sup> 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
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 207 (Gen Ed Math)	5
MTH 151 (Gen Ed Math)	4 CHM 104	5
Gen Ed Arts	2-3 FYS 100 (Gen Ed First-Year Seminar)	3
	<b>15</b>	<b>16</b>

#### Year 2

Fall	Credits Spring	Credits
CHM 271	1 CHM 304	3
CHM 331	3 CHM 305	2
MTH 208 (Gen Ed Math)	4 Gen Ed Global Studies	3
CHM 303	3 MTH 310	4
PHY 103 or 203 (Gen Ed Natural Lab Science)	4 PHY 104 or 204	4
	<b>15</b>	<b>16</b>

#### Year 3

Fall	Credits Spring	Credits
CHM 309	3 Gen Ed Humanistic Studies	3
CHM 301	5 CHM 313	2
CSH Core (300/400 not from major) or Minor	3 CSH Core (300/400 not from major) or Minor	3
University Elective	1 Gen Ed Health & Well-Being	3
Gen Ed World History	3 CHM 310	3
	<b>15</b>	<b>14</b>

#### Year 4

Fall	Credits Spring	Credits
CHM 325 or 417	4 CHM In-Depth Coursework - see list <sup>1</sup>	1-4
CHM In-Depth Coursework - see list <sup>1</sup>	1-4 CSH Core (300/400 not from major) or Minor	3
CHM In-Depth Coursework - see list <sup>1</sup>	1-4 CSH Core or Minor <sup>2</sup>	3
CSH Core or Minor <sup>2</sup>	3 Gen Ed Minority Cultures	3
Gen Ed Self & Society	3 University Elective	2
Gen Ed Arts	2-3 Exam and Survey Requirement <sup>3</sup>	
	<b>16</b>	<b>13</b>

**Total Credits: 120**

<sup>3</sup> **Exam and Survey Requirement** - During the student's last semester on campus, completions of the following is required in order to graduate:

1. the Department of Chemistry and Biochemistry Learning Environment Survey and
2. a standardized exam covering the major subject area.

<sup>1</sup> Students must complete a combination of upper level elective courses in chemistry totaling at least 6 course credits, of which 3 or more credits must be comprised of laboratory content. See list of in-depth upper-level elective courses.

<sup>2</sup> 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.