

# Mathematics Major - Bachelor of Science (BS)

## Major Requirements

(All colleges)

39 credits (43 total credits including CS 120)

Code	Title	Credits
<b>Core courses</b>		
MTH 207	Calculus I	5
MTH 208	Calculus II	4
MTH 225	Foundations of Advanced Mathematics <sup>1</sup>	4
MTH 309	Linear Algebra	4
MTH 310	Calculus III: Multivariable Calculus	4
<b>Group I</b>		
Select three credits from the following:		3
MTH 311	Number Theory	
MTH 317	Graph Theory	
<b>Group II</b>		
Select three credits from the following:		3
MTH 353	Differential Equations and Dynamical Systems	
MTH 362	Complex Variables	
MTH 371	Numerical Methods	
<b>Group III</b>		
Select six credits from the following:		6
MTH 407	Real Analysis I	
MTH 411	Abstract Algebra I	
MTH 415	Topology	
<b>Electives <sup>2</sup></b>		
Select six credits not already taken from the following:		6
MTH 311	Number Theory	
MTH 317	Graph Theory	
MTH 320	History of Mathematics	
MTH 331	Modern Geometry	
MTH 353	Differential Equations and Dynamical Systems	
MTH 362	Complex Variables	
MTH 371	Numerical Methods	
MTH 407	Real Analysis I	
MTH 408	Real Analysis II	
MTH 411	Abstract Algebra I	
MTH 412	Abstract Algebra II	
MTH 415	Topology	
STAT 245	Probability and Statistics	
STAT 441	Mathematical Statistics I	
STAT 442	Mathematical Statistics II	
CHM 310	Physical Chemistry Theory II <sup>2</sup>	
CS 453	Introduction to Theory of Computation <sup>2</sup>	
PHY 461	Mathematical Physics	

PHY 470 Advanced Quantum Mechanics <sup>2</sup>

**Total Credits** 39

<sup>1</sup> May substitute CS 225 for MTH 225.

<sup>2</sup> At most, one from CHM 310, CS 453, and PHY 470 can be used as elective credit.

In addition CS 120 Software Design I (4 cr.) must be taken.

## 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 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
MTH 207 (Gen Ed Math)	5 MTH 208 (Gen Ed Math)	4
PHY 103 (or other Gen Ed Lab Science)	4 PHY 104 (or other lab science for CSH Core requirement)	4
CST 110 (Gen Ed Literacy-Oral)	3 ENG 110 or 112 (Gen Ed Literacy-Written)	3
Gen Ed World History	3 FYS 100 (Gen Ed First-Year Seminar)	3
	<b>15</b>	<b>14</b>

Year 2		
Fall	Credits Spring	Credits
MTH 310	4 MTH 309	4
MTH 225	4 CS 120 (Gen Ed Lang/Logical Systems)	4
Gen Ed Arts	2-3 Gen Ed Self & Society	3
Gen Ed Global Studies	3 Gen Ed Minority Cultures	3
University Elective	3 Gen Ed Arts	2-3
	<b>16</b>	<b>16</b>

Year 3		
Fall	Credits Spring	Credits
MTH 353, 362, or 371 (Group II)	3 MTH 311 or 317 (Group I)	3
CSH Core (300/400 not MTH) or Minor	3 MTH Elective	3
Gen Ed Humanistic Studies	3 CSH Core (300/400 not MTH) or Minor	3
Gen Ed Health & Well-Being	3 CSH Core (300/400 not MTH) or Minor	3
University Elective	3 University Elective	3
	<b>15</b>	<b>15</b>

Year 4		
Fall	Credits Spring	Credits
MTH 407, 411, or 415 (Group III)	3 MTH 407, 411, or 415 (Group III)	3
MTH Elective	3 CSH Core (300/400 not MTH) or Minor	3
CSH Core or Minor <sup>1</sup>	3 CSH Core or Minor <sup>1</sup>	3

University Elective at 300/400 level	3 University Elective at 300/400 level	3
University Elective	2 University Elective	3
	<b>14</b>	<b>15</b>

**Total Credits: 120**

<sup>1</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.