MATHEMATICS, STATISTICS AND APPLIED MATHEMATICS EMPHASIS, MAJOR

Liberal Arts (Code 180-209)

University Requirements

GRADUATION REQUIREMENTS FOR BACCALAUREATE DEGREE

Credit Requirements	
Minimum total for graduation [1]	120
Upper division credits (courses numbered 300 and higher)	39
Liberal Education Core (http://catalog.uwec.edu/undergraduate/graduation-requirements/#header1)	36
Academic Concentrations (http://catalog.uwec.edu/undergraduate/graduation-requirements/#header16)	
Grade Point Requirements (http://catalog.uwec.edu/undergraduate/graduation-requirements/#header14) [2]	
Total	2.00 average
Resident	2.00 average
Major	2.00 average
Minor	2.00 average
Certificate	2.00 average
University Residency Requirements (http://catalog.uwec.edu/undergraduate/graduation-requirements/#header15)	
Minimum total	30
Senior year	23
Major, Standard, upper division in residence	12
Major, Comprehensive, upper division in residence	21
Certificate	25 percent of credits

Procedures Required for Graduation
Obtain admission to the degree program and/or the College offering it.
Apply for graduation on CampS.

[1]   Certain programs exceed this minimum.
[2]   See special requirements in each College.

Applicability of Credits Toward Graduation

Junior College or Two-Year College Credits. A maximum of 72 semester credits earned in a junior college or two-year college will be accepted as degree credits at UW-Eau Claire.

Extension Credits. Credits earned in credit outreach courses offered by UW-Eau Claire are treated as resident credits. Credits earned in extension courses offered by other units of the University of Wisconsin System are treated as transfer credits. All other (non-UW) extension and correspondence credits are normally limited to one-fourth of the total required for graduation from any curriculum.

WTCS Credits. A maximum of 72 semester credits earned in college parallel programs at Madison Area Technical College, Milwaukee Area Technical College, Nicolet Area Technical College, or Chippewa Valley Technical College may be accepted as degree credits at UW-Eau Claire. A set number of general education courses will be accepted from other technical schools. Occupational and technical courses may also be considered for transfer if the quality and content of the course work from the technical college is judged to be comparable to course work at UW-Eau Claire. Refer to the Transfer Credit Wizard (https://my.uwec.edu/psp/PUBLIC/EMPLOYEE/HRMS/c/EAU_SS_CUSTOM.EAU_TRNCRDWZ.GBL) or contact the UW-Eau Claire Admissions Office for information about the current transfer policy.

USAFI Credit. UW-Eau Claire will accept up to 32 semester credits for work done through the United States Armed Forces Institute, under the provision for non-UW correspondence credit (see Extension Credits above).

Activity Credit (band, chorus, drama, KINS 100-184 courses) Students may count toward graduation no more than one credit of KINS 110-184 courses. Students may count toward graduation no more than four credits earned in any single activity course and no more than 12 credits resulting from any combination of activity courses (excluding KINS 110-184 courses).

Other Restricted Credits. For other University restrictions, see the following: Cooperative Education; Credit by Examination; Satisfactory/Unsatisfactory Registration; Transfer of Credits. College or departmental restrictions may also be placed on Independent Study (399-499 courses), Directed Study (395-495), and other types of credits.

APPLICABILITY OF CREDITS TOWARD GRADUATION	Credit Restrictions
Satisfactory/Unsatisfactory	
Total degree credit	maximum 12
Major, Standard	maximum 1 course
Major, Comprehensive	maximum 2 courses
Minor	maximum 1 course
Credit by Examination	
Total degree credit	maximum ¼ of total
Major or minor	maximum ½ of total
Two-Year College Credits	
Total degree credit	maximum 72 credits
Activity credit (band, chorus, drama, KINS 100-184)	
Total KINS 100-184	maximum 1 credit
Total Band, chorus, drama	maximum 12 credits
Single course band, chorus, drama	maximum 4 credits
Extension credits	
UW-System	no maximum
Other extension/correspondence	maximum ¼ of total
USAFI	

USAFI	maximum 32 credits

Liberal Education Core

The University of Wisconsin-Eau Claire measures learning outcomes to ensure that its graduates have achieved a liberal education and prepared themselves to contribute to a complex society. Upon graduation, each undergraduate will have met the five learning goals of our liberal education core and the 12 learning outcomes they comprise.

LIBERAL EDUCATION CORE REQUIREMENTS	a minimum of 36 credits
Knowledge Goal	
Knowledge Outcome 1 (K1): Natural Sciences (http://catalog.uwec.edu/undergraduate/attribute-k1/)	Two (2) learning experiences
One experience in laboratory science must be selected from either K1 or K2.	
Knowledge Outcome 2 (K2): Social Sciences (http://catalog.uwec.edu/undergraduate/attribute-k2/)	Two (2) learning experiences
One experience in laboratory science must be selected from either K1 or K2.	
Knowledge Outcome 3 (K3): Humanities (http://catalog.uwec.edu/undergraduate/attribute-k3/)	Two (2) learning experiences
Knowledge Outcome 4 (K4): Fine Arts (http://catalog.uwec.edu/undergraduate/attribute-k4/)	One (1) learning experience
Skills Goal	
Skills Outcome 1 (S1): Written and Oral Communication (http://catalog.uwec.edu/undergraduate/attribute-S1/)	Two (2) learning experiences
One S1 must meet the University Writing Requirement (http://catalog.uwec.edu/undergraduate/graduation-requirements/#header10)	
Skills Outcome 2 (S2): Mathematics (http://catalog.uwec.edu/undergraduate/attribute-S2/)	One (1) learning experience
One S2 to meet the University Mathematics Requirement (http://catalog.uwec.edu/undergraduate/graduation-requirements/#header11)	
Skills Outcome 3 (S3): Creativity (http://catalog.uwec.edu/undergraduate/attribute-S3/)	One (1) learning experience
Responsibility Goal	
Responsibility Outcome 1 (R1): Equity, Diversity, and Inclusivity (http://catalog.uwec.edu/undergraduate/attribute-R1/)	Two (2) learning experiences
One R1 must satisfy Design for Diversity (http://catalog.uwec.edu/undergraduate/attribute-DDIV/#header13)	
Responsibility Outcome 2 (R2): Global Perspectives (http://catalog.uwec.edu/undergraduate/attribute-R2/)	One (1) learning experience
Responsibility Outcome 3 (R3): Civic and Environmental Issues (http://catalog.uwec.edu/undergraduate/attribute-R3/)	One (1) learning experience
Integration Goal	
Integration Outcome 1 (I1): Integration (http://catalog.uwec.edu/undergraduate/attribute-I1/)	Two (2) learning experiences
Service-Learning Goal	
Service-Learning (http://catalog.uwec.edu/undergraduate/attribute-SL/#header13)	30 hours

College Degree Requirements
Bachelor of Arts or Bachelor of Science Degree (B.A./B.S.)

University Graduation Requirements. All candidates for degrees must fulfill the requirements for credits, curriculum, GPA, and University residency as specified in the section of this catalog titled University Graduation Requirements (http://catalog.uwec.edu/undergraduate/graduation-requirements/).

College Graduation Requirements: Grade Point Averages. All candidates for degrees in the College of Arts and Sciences must earn minimum resident and total GPAs of 2.00 in the major, the minor, and the certificate. The resident and total GPAs for the major are computed using all attempted credits applicable to the major including those offered by departments other than the major department. The resident and total GPAs for the minor and the certificate are computed similarly.

Major-Minor and Major-Certificate Requirements. A standard major (a minimum of 36 credits) must be supplemented by a minor (a minimum of 24 credits) or by a certificate (12 to 18 credits) to meet graduation requirements for completing a first and second degree program. No minor or certificate is required with a Comprehensive Major (60 or more credits) or with two majors of 36 or more credits each.

Certain degree programs, which include Comprehensive Majors, may require more than the minimum of 120 credits for graduation.

Acceptable academic program combinations are determined at the college level. A major and a minor or a major and certificate or two majors (if available) may not be elected in the same department or program, except in the approved combinations listed here (http://catalog.uwec.edu/undergraduate/arts-sciences/#academicprogramstext).

College Credits. Earn at least 90 credits in courses offered by the College of Arts and Sciences.

Bachelor of Arts Degree in the College of Arts and Sciences (B.A.)

Fulfillment of all University Graduation Requirements (which includes the Liberal Education Core); all College-level degree requirements (major and minor/certificate emphases, GPAs, earning at least 90 credits in Arts and Sciences course work); foreign language competency at the 102 level. Foreign language competency may be met in one of two ways: (1) Achieve a score on the foreign language placement test that qualifies the student to enter the 201-level course in a foreign language. (2) Earn a grade of at least C (not C-) or a mark of S in a 102-level foreign language course (or AIS 112 or AIS 122 / LANG 122 or CSD 103).

Bachelor of Science Degree in the College of Arts and Sciences (B.S.)

Fulfillment of all University Graduation Requirements (which includes the Liberal Education Core); all College-level degree requirements (major and minor/certificate emphases, GPAs, earning at least 90 credits in Arts and

Sciences course work); mathematics competency at the MATH 111, MATH 112 or MATH 113 level. Mathematics competency can be met in one of three ways: (1) Achieve a score on the mathematics placement test that qualifies the student to enter MATH 114. (2) Earn a grade of at least C (not C-) or a mark of S in MATH 111, MATH 112, or MATH 113. (3) Achieve a satisfactory score on the MATH 112 competency test. This test may be attempted no more than two times.

Major Requirements

Liberal Arts (Code 180-209)

The statistics and applied mathematics emphasis is appropriate for students interested in either scientific or engineering applications of mathematics, careers in business, industry or statistics, data science, or graduate work in areas such as engineering, operations research, optimization, or statistics. Because of the variety of courses available, students are encouraged to consult a mathematics advisor early and frequently while pursuing this emphasis.

For those students focusing on applied mathematics, MATH 312 is strongly recommended. For those students focusing on statistics, MATH 347 is strongly recommended.

A minimum of 36 credits from mathematics courses must be earned as described below.

Code	Title	Credits
Core Requirements:		
MATH 114	Calculus I	4
MATH 215	Calculus II	4
MATH 216	Calculus III	4
MATH 316	Introduction to Real Analysis	3
MATH 324	Linear Algebra	4
MATH 425	Abstract Algebra I	3

Elective Requirements

Code	Title	Credits
At least ten credits from the following list. MATH 312 or MATH 347 must be taken.		
MATH 307	Mathematics and Music	
MATH 312	Differential Equations and Linear Algebra	
MATH 313	Digital Signal Processing	
MATH 318	Introduction to Complex Variables	
MATH 345	Introduction to Probability and Mathematical Statistics	
MATH 346	Introduction to Probability	
MATH 347	Mathematical Statistics	
MATH 351	Numerical Analysis I	
MATH 354	Introduction to Mathematical Modeling	
MATH/PHYS 440	Digital Image Processing	
MATH 441	Linear Regression Analysis, with Time Series	
MATH 442	Advanced Statistical Modeling	
MATH 443	Experimental Design and Analysis	
MATH 445	Survey Sampling	
MATH 447	Nonparametric Statistics	

Plus additional upper division mathematics courses to reach 36 credits. Credits from MATH 302, MATH 303, MATH 304, MATH 305, MATH 322, MATH 365, MATH 451, and MATH 498 may not be counted towards the required 36 credits.

Code	Title	Credits
Minimum three credits required, not counted toward credits in major, from the following:		
PHIL 250	Symbolic Logic	
CS 145	Programming for New Programmers	
CS 163	Introduction to Programming in C++	
DS 150	Computing in Python: Fundamentals and Procedural Programming	
Another computer science course approved by the Mathematics Department		

Program Learning Outcomes

Students completing this program will be expected to meet the following learning outcomes:

- Apply a broad range of perspectives, including numerical, graphical, algebraic, analytical and verbal, to effectively connect and communicate mathematical ideas.
- Use mathematics to model and solve appropriate problems.
- Write mathematical proofs.
- Work independently and collaboratively on mathematical problems.
- Use mathematics to solve problems for the natural, social, or actuarial sciences.
- Select appropriate methods and apply them using technology to solve problems.

Sample Degree Plan
Mathematics, Statistics and Applied Mathematics Emphasis, Major, B.S.

The following is a sample degree plan, based on the 2023-2024 catalog. It is based on the 120-credit graduation requirement and assumes no transferred credits, no requirements waived by placement tests, no courses taken in the summer or winter, no repeated courses, and no remedial courses that may be required. This sample degree plan is intended for first-year students entering UW-Eau Claire in the fall semester. Your own degree plan may differ depending on the course of study selected (second major, minor, etc.). UW-Eau Claire cannot guarantee all courses will be offered as shown, but will provide a range of courses that may enable prepared students to fulfill their requirements in a timely period. This sample degree plan is just a guide. Please consult your advisor, your degree audit, and the catalog to create your own degree plan. *Note*: In order to earn the required minimum of 120 credits for the degree in four years, you should plan to take 15 credits each semester or 30 credits each year.

To earn a degree, students must fulfill all University Graduation Requirements, including the Liberal Education (LE) Core. LE Core course work in the following sample degree plan uses abbreviations such as LE-K1, LE-S2, LE-R3, and LE-I1 to represent the learning outcomes students will meet via completion of their liberal education course work. Please click (https://catalog.uwec.edu/undergraduate/graduation-requirements/)here for a description of the Liberal Education Core outcomes and requirements. Note that the LE Core may be completed through both course and non-course experiences.

Students in this major have the option to pursue either a Bachelor of Arts (B.A.) or a Bachelor of Science (B.S.) degree. The degrees are distinguished by

foreign language competency for the B.A. and a higher level of mathematics competency for the B.S.

FIRST YEAR

FIRST SEMESTER		
MATH 114	Calculus I (LE-S2)	4
SECOND SEMESTER		
MATH 215	Calculus II (prereq for MATH 324)	4
SOME TIME IN THE FIRST YEAR		
WRIT 114	Intensive Blugold Seminar in Critical Reading and Writing (LE-S1)	5
OR		
WRIT 116	Blugold Seminar in Critical Reading and Writing (LE-S1)	
LE Option: Responsibility 2 (LE-R2) Global Perspectives with LE Option: Knowledge 2 (LE-K2) Social Sciences or LE Option: Knowledge 3 (LE-K3) Humanities or LE Option: Knowledge 4 (LE-K4) Fine Arts		3
LE Option: Knowledge 2 (LE-K2) Social Sciences or LE Option: Knowledge 3 (LE-K3) Humanities or LE Option: Knowledge 4 (LE-K4) Fine Arts [***]		3
LE Option: Skills 1 (LE-S1) Written and Oral Communication		3
LE Option: Responsibility 1 (LE-R1) Equity, Diversity, and Inclusivity with LE Option: Knowledge 2 (LE-K2) Social Sciences or LE Option: Knowledge 3 (LE-K3) Humanities		3
LE Option: Knowledge 2 (LE-K2) Social Sciences or LE Option: Knowledge 3 (LE-K3) Humanities or LE Option: Knowledge 4 (LE-K4) Fine Arts [***]		3
LE Option: Integration (LE-I1) [*]		3
TOTAL FIRST YEAR		**31**
SECOND YEAR		
FIRST SEMESTER		
MATH 216	Calculus III (prereq for MATH 316)	4
SECOND SEMESTER		
MATH 324	Linear Algebra (prereq for MATH 316, 425)	4
MATH 312	Differential Equations and Linear Algebra [a]	4
OR		
MATH 346	Introduction to Probability [a]	
SOME TIME IN THE SECOND YEAR		
LE Option: Knowledge 1 (LE-K1) Natural Sciences		4
LE Option: Knowledge 2 (LE-K2) Social Sciences or LE Option: Knowledge 3 (LE-K3) Humanities or LE Option: Knowledge 4 (LE-K4) Fine Arts [***]		3
LE Option: Responsibility 3 (LE-R3) Civic and Environmental Issues		3
LE Option: Knowledge 1 (LE-K1) Natural Sciences		4
LE Option: Responsibility 1 (LE-R1, DDIV) Equity, Diversity, and Inclusivity with Design for Diversity		3
TOTAL SECOND YEAR		**29**
THIRD YEAR		
FIRST SEMESTER		
MATH 316	Introduction to Real Analysis	3
MATH 347	Mathematical Statistics	4

OR		
Applied/Stats elective [c]		
SECOND SEMESTER		
MATH 425	Abstract Algebra I	3
MATH Applied/Stats Elective [c]		2-4
SOME TIME IN THE THIRD YEAR		
CS 145, CS 163, DS 150, PHIL 250 [e]		3-4
LE Option: Integration (LE-I1) [*]		3
LE Option: Knowledge 2 (LE-K2) Social Sciences or LE Option: Knowledge 3 (LE-K3) Humanities or LE Option: Knowledge 4 (LE-K4) Fine Arts [***]		3
LE Option: Skills 3 (LE-S3) Creativity [**]		3
LE Option: Integration (LE-I1) [*]		3
Minor/Electives		3
TOTAL THIRD YEAR		**29-33**
FOURTH YEAR		
FIRST SEMESTER		
MATH Applied/Stats Elective [c]		2-4
Minor/Electives		3
Minor/Electives		3
Minor/Electives		3
Minor/Electives		3
SECOND SEMESTER		
MATH elective [d]		2-4
Minor		3
Minor		3
Elective		3
Elective		3
TOTAL FOURTH YEAR		**28-32**

Minimum total for the baccalaureate degree = 120 credits

[*] One of the two experiences required for Integrative Learning (I3) may be fulfilled with a math course with the I3 designation such as MATH 307 or MATH 462.

[**] The Creativity (S3) experience can be fulfilled with a math course with the S3 designation such as MATH 307 or MATH 380.

[***] In this 4-year plan, the experiences for (K2), (K3), and (K4) are listed together. The appropriate number of experiences from each learning outcome will be required. See LE Core.

[a] For students interested in focusing on applied math, MATH 312 is recommended. For students interested in focusing on statistics, MATH 346 is recommended.

[b] For students interested in focusing on statistics, MATH 347 is recommended. It is a prerequisite to the courses listed as statistics electives[c].

[c] The Applied/Statistics emphasis allows students to choose courses that emphasize either applied math or statistics.

- Students interested in focusing on applied math are recommended to choose electives from the following list of applied electives: MATH 307, MATH 313, MATH 318, MATH 345, MATH 351, MATH 354, MATH 440 (PHYS 440).

- Students interested in focusing on statistics are recommended to choose electives from the following list of statistics electives: MATH 441, MATH 443, MATH 445, MATH 447.

d. At least 10 credits are required from the following list: MATH 307, MATH 312, MATH 313, MATH 318, MATH 345, MATH 346, MATH 347, MATH 351, MATH 354, MATH 440 (PHYS 440), MATH 441, MATH 443, MATH 445, MATH 447. Students who have fulfilled this requirement may take an additional course from this list, or another MATH elective numbered above MATH 305, to achieve at least 36 credits of courses that count toward the major.

e. Students must complete at least three credits to be selected from PHIL 250, CS 145, CS 163, DS 150, or another computer science course approved by the Math Department.

Note: All students must complete the 30-hour Service-Learning Requirement via a non-credit or credit option (see Undergraduate Graduation Requirements (http://catalog.uwec.edu/undergraduate/graduation-requirements/)).

RECOMMENDATIONS FOR HIGH IMPACT PRACTICES (HIPs)

The University of Wisconsin-Eau Claire encourages all students to participate in High Impact Practices. The following information identifies any specific recommendations that faculty in this major have concerning which HIPs might be most beneficial to students, and any recommendations about when those HIPs best fit into the degree plan. Students should also consult their faculty advisor for information on HIPs. There are many additional high impact opportunities available. Talk to your academic advisor for more information about incorporating HIPs like Study Abroad (https://studyabroad.apps.uwec.edu/), Intercultural Immersion (https://www.uwec.edu/immersion/), Internship (https://www.uwec.edu/career-services/info-students/internships/), and/or Student/Faculty Collaborative Research (https://www.uwec.edu/orsp/students/student-faculty-collaborative-research-guide/) into your time at UW-Eau Claire.

Students in the Applied/Stats emphasis are strongly encouraged to participate in student/faculty research. Watch for announcements of potential research projects and meet with potential research advisors in the spring preceding the year in which student/faculty research will begin (for example, spring of the first year for a research project during sophomore year).

Liberal Education (LE) Core Guidance

Liberal Education Core (LE Core)

The LE Core comprises 17 learning experiences across 11 learning outcomes. Students must complete a minimum of 36 credits in courses approved for the LE Core.

- K1 – Natural Sciences; two experiences (one lab science experience is required in K1 or K2).

- K2 – Social Sciences; two experiences (one lab science experience is required in K1 or K2).

- K3 – Humanities; two experiences.

- K4 – Fine Arts; one experience.

- S1 – Written and Oral Communication; two experiences (one experience must satisfy the University writing requirement).

- S2 – Mathematics; one experience (must satisfy the University math competency requirement).

- S3 – Creativity; one experience (can be fulfilled in a student's major).

- R1 – Equity, Diversity, and Inclusivity; two experiences (one experience must meet the UW System Design for Diversity (DD) requirement).

- R2 – Global Perspectives; one experience.

- R3 – Civic and Environmental Issues; one experience.

- I1 – Integration; two experiences (one experience can be fulfilled in a student's major).

- SL—Service Learning; 30 hours

Additional LE Core Information

- Most LE Core learning experiences are course based, and many courses meet more than one learning outcome (e.g., K3 and R2 or K1 and R3).

- Some learning experiences can also be met outside of a traditional course (e.g., undergraduate research (S3), study abroad (I1)).

- S1 – An English placement score that fulfills the University writing requirement fulfills one S1 experience.

- S1 – A foreign Language placement score that qualifies the student to enter the 102 level satisfies one S1 experience.

- S1, R2 – A foreign language placement score that qualifies the student to enter the 202 level satisfies one experience in S1 and the R2 experience.

- S2 – A math placement score that qualifies the student to enter Math 111, 112, 113 or 114 fulfills the S2 experience.

- S3 – Completion of two credits from any approved music ensemble fulfills the S3 experience.

- I1 – Any semester long study abroad program can fulfill one I1 experience.