ACTUARIAL SCIENCE, BA

UWM undergraduate students can major in actuarial science in the College of Letters & Science. Students are exposed to multi-disciplinary coursework in mathematics, statistics, economics, business, and computer programming. By taking full advantage of coursework, advising, and professional development opportunities, students can grow into attractive job candidates.

Course of Study – Bachelor of Arts Degree

Complete 120 credits including 75 credits in the College of Letters & Science and with 36 of the 75 credits in L&S upper-level (numbered above 300) courses.

The College requires that students must complete in residence at UWM at least 15 credits in upper-division (numbered 300 or above) courses in their major. The College also requires that students complete at least 30 credits overall in residence at UWM. For additional residency and transfer credit limitations, see L&S Undergraduate Policies and Regulations (https://catalog.uwm.edu/letters-science/#policiesandregulationstext).

Students are also required to complete University-wide General Education Requirements (https://catalog.uwm.edu/policies/undergraduate-policies/#bachelorsdegreegeneraleducation) and the specific L&S requirements listed below.

To complete a major, students must satisfy all the requirements of the major as stated in this catalog. Students who declare their majors within five years of entering the UW System as a degree candidate may satisfy the requirements outlined in any catalog issued since the time they entered. Credits used to satisfy the major also may be used to satisfy other degree requirements.

University General Education Requirements (GER)

Code	Title	Credits
Oral and Written Communication		
Part A		
Achieve a grade of C or better in the following course:		
ENGLISH 102	College Writing and Research (or equivalent)	
Part B		
Course designated as OWC-B; may be completed through a major-specific course requirement		
Quantitative Literacy		
Part A		
Earn at least 3 credits with a grade of C or higher in one of the following courses or an equivalent course, or achieve a placement code of at least 30 on the mathematics placement test (or other appropriate test, as determined by the Mathematical Sciences Department)		
MATH 102	Mathematical Literacy for College Students II	
MATH 103	Contemporary Applications of Mathematics	
MATH 105	Introduction to College Algebra	
MATH 108	Algebraic Literacy II	
MATH 111	Introduction to Logic - Critical Reasoning [1]	
or PHILOS 111	Introduction to Logic - Critical Reasoning	
MATH 116	College Algebra	
Or equivalent course		
Part B		
Course designated as QL-B; may be completed through a major-specific course requirement		
Arts		
Select 3 credits		3
Humanities		
Select 6 credits		6
Social Sciences		
Select 6 credits		6
Natural Sciences		
Select 6 credits (at least two courses including one lab)		6
UWM Foreign Language Requirement		
Complete Foreign Language Requirement through:		
Two years (high school) of a single foreign language		
Two semesters (college) of a single foreign language		
Or equivalent		
UWM Cultural Diversity Requirement		
One course from the Arts, Humanities, or Social Sciences must also satisfy UWM's Cultural Diversity requirement		

[1]   Math 111 and Philosophy 111 are jointly offered and count as repeats of one another. Students cannot receive credit for both courses.

College of Letters & Science Requirements

The degree requirements in the College of Letters and Science build on the University General Education Requirements to provide a broad base of knowledge as well as an array of skills cited by employers as critical to professional success: critical thinking, problem solving, oral and written communication, ability to work well with others, and adaptability to change.

For the Bachelor of Arts (B.A.), you must complete the UWM General Education Requirements as well as these L&S requirements: the International requirement, the Breadth requirement, and the Research requirement. The International requirement develops your potential for cross-cultural understanding in a globalizing world. The Breadth requirement ensures that you take classes in a wide variety of subjects, across humanities, natural sciences, and social sciences. The Research requirement calls for you to build your critical thinking and oral and written communication skills through conducting an independent research project, usually in your major.

For the Bachelor of Arts (B.A.) you will also complete the Language other than English requirement, to further develop your understanding of cultures through language.

I. Total Credits and Upper-Division Courses Requirement

Students must complete 120 credits including 75 credits in the College of Letters & Science and with 36 of the 75 credits in L&S upper-level (numbered above 300) courses.

II. Language other than English Requirement

Students doing the BA must fulfill the language other than English requirement by either successfully completing the fourth semester of university work or equivalent in one language other than English, or by successfully completing the second semester of university work

or equivalent in two languages other than English (including all world languages and American Sign Language).

Language courses (including American Sign Language) other than English taken in high school may be used to satisfy all or part of this requirement. One year of high school language equates to one semester of college work. Proficiency tests approved by the Languages faculty may be used to satisfy all or part of this requirement.

Completion of the L&S Language Requirement also satisfies the university-wide Language other than English GER, but not vice versa.

III. International Requirement

To meet the International Requirement, students must successfully complete some three course (minimum 9 credits) combination of

1. language other than English (*not* including American Sign Language) at 3rd semester level or above, ***and/or***
2. non-language courses with L&S approved international content (see Courses Approved for the L&S International Requirement (https://catalog.uwm.edu/letters-science/approved-courses-international-requirement/) for course options).

IV. Breadth Requirement

In addition to completing the University General Education Requirements, L&S students must complete the Breadth requirement.

The L&S Breadth requirement calls for 6 credits each in L&S courses designated L&S Humanities, L&S Natural Sciences, and L&S Social Sciences breadth. One of the L&S Natural Science breadth courses must be a laboratory or fieldwork course. These courses must be beyond and in addition to courses in those areas used to satisfy General Education Requirements.

Please refer to the list of Courses Approved for the L&S Breadth Requirement (https://catalog.uwm.edu/letters-science/breadth-requirement-course-list/).

V. The Major

The College of Letters and Science requires that students attain at least a 2.0 GPA in all credits in the major attempted at UWM. In addition, students must attain a 2.0 GPA on all major credits attempted, including any transfer work. Individual departments or programs may require higher GPAs for graduation. Some departmental majors require courses from other departments. Contact your major department for information on whether those credits will count as part of the major GPA. The College requires that students must complete in residence at UWM at least 15 credits in upper-division (numbered 300 or above) courses in their major.

Research Requirement

Within their majors, students must complete a research experience approved by the L&S faculty. A list of courses satisfying the research requirement in each major can be found here (https://catalog.uwm.edu/letters-science/approved-courses-research-requirement/).

VI. The Minor

Students are encouraged to consider completing a minor, but it is not required. To complete a minor, the College of Letters and Science requires that students attain at least a 2.0 GPA in all credits in the minor attempted at UWM. In addition, students must attain a 2.0 GPA on all minor credits attempted, including any transfer work. The minor must contain at least 9 credits in upper-division (numbered 300 and above) courses.

Actuarial Science Major Requirements

Students who intend to complete the BA in Actuarial Science program in four years will need to begin taking mathematics in their first semester. Such students should have a University of Wisconsin-Milwaukee mathematics placement level of 30 (ready for precalculus) or better.

Preparatory Curriculum

Students must complete one of Calculus Sequences: MATH 211 and MATH 212, or MATH 231 (or MATH 213), MATH 232, and MATH 233 (or equivalent). MATH 221 and MATH 222 are equivalent to MATH 231, MATH 232, and MATH 233. Students majoring in actuarial science must have an average GPA of at least 2.500 in these courses. Additional preparatory curricula are required, as listed below.

Capstone Experience

Students must complete a Capstone Experience. The aim of the capstone experience is to encourage independent learning. Students complete a research paper in the context of this course, which satisfies the L&S research requirement. For Actuarial Science majors, the capstone is ACTSCI 599. Students must obtain consent of the instructor to enroll in ACTSCI 599.

Requirements

Students must complete the courses listed below, including at least 15 upper-division (numbered 300 and above) credits in the major in residence at UWM. The College of Letters & Science requires that students attain at least a 2.0 GPA on all credits in the major attempted at UWM. In addition, students must attain a 2.0 GPA on all major credits attempted, including any transfer work.

Code	Title	Credits
Preparatory Curriculum		
Preparatory Calculus sequence [1]		*8-12*
Majors must achieve a GPA of at least 2.500 in the Calculus sequence to complete the degree.		
MATH 211 & MATH 212	Survey in Calculus and Analytic Geometry I and Survey in Calculus and Analytic Geometry II	
MATH 231 & MATH 232 & MATH 233	Calculus and Analytic Geometry I and Calculus and Analytic Geometry II and Calculus and Analytic Geometry III [2]	
Additional preparatory coursework		
ACTSCI 290	Introduction to Actuarial Science	3
MATH 234	Linear Algebra and Differential Equations	3-4
or MATH 240	Matrices and Applications	
COMPSCI 250	Introductory Computer Programming	4
COMPSCI 251	Intermediate Computer Programming	4
BUS ADM 201	Introduction to Financial Accounting	4
ECON 103	Principles of Microeconomics	3
ECON 104	Principles of Macroeconomics	3
Core Curriculum		
ACTSCI 391	Investment Mathematics I	4
MTHSTAT 361	Introduction to Mathematical Statistics I	3

MTHSTAT 362	Introduction to Mathematical Statistics II	3
BUS ADM 350	Principles of Finance	3
or BUS ADM 450	Intermediate Finance	
ACTSCI 490	Introduction to Actuarial Practice	1
ACTSCI 491	Actuarial Workshop FM	1
ACTSCI 492	Actuarial Workshop P	1
ACTSCI 599	Capstone Experience	1
ACTSCI 593	Actuarial Models I	3
ACTSCI 596	Actuarial Statistics I	3
ACTSCI 594	Actuarial Models II	3
or ACTSCI 597	Actuarial Statistics II	
MTHSTAT 563	Regression Analysis	3
MTHSTAT 564	Time Series Analysis	3
MTHSTAT 568	Multivariate Statistical Analysis	3
Select one of the following three courses:		3
ACTSCI 591	Investment Mathematics II	
MATH 583	Introduction to Probability Models	
MTHSTAT 566	Computational Statistics	
Total Credits		**70-75**

[1] Majors must complete one of the following sequences or its equivalent; for example, one equivalent sequence is MATH 221 (https://catalog.uwm.edu/search/?P=MATH%20221) & MATH 222 (https://catalog.uwm.edu/search/?P=MATH%20222). For approval see the Actuarial Science advisor.

[2] MATH 231 may be replaced by MATH 213 in this sequence.

Recommended Electives

To achieve the best preparation for an actuarial career, students actively should pursue internship opportunities with insurance companies, consulting firms, and other organizations that require actuarial science knowledge. Once such an opportunity is secured, the student should enroll in ACTSCI 590. Students also should take courses in business communication (COMMUN 105, ENGLISH 205), computer science (COMPSCI 351, COMPSCI 557), and expand their knowledge in economics (ECON 325, ECON 450).

Professional Development

For future advancement in the field of actuarial science, "Validation by Educational Experience" (VEE) credits are required. VEE credits may be earned from the Society of Actuaries (SOA) and Casualty Actuarial Society (CAS) with a grade of B- or better in the following courses:

Code	Title	Credits
MTHSTAT 362	Introduction to Mathematical Statistics II (VEE-Mathematical Statistics)	3
ECON 103	Principles of Microeconomics (VEE-Economics)	3
ECON 104	Principles of Macroeconomics (VEE-Economics)	3
BUS ADM 201	Introduction to Financial Accounting (VEE-Accounting and Finance)	4
BUS ADM 450	Intermediate Finance (VEE-Accounting and Finance)	3

Courses taken at other universities may be used to meet the VEE requirement of the SOA/CAS.

Actuarial Science BA Learning Outcomes

Students graduating from this program will be able to:

1. **integrate** applications, problem-solving and theory.
2. **apply** the analytical and critical thinking skills required for efficient use, appreciation, and understanding of the mathematical sciences.
3. **communicate** mathematical sciences in technical and non-technical terms.
4. **engage** in continuing study and application of the mathematical sciences.
5. **associate** and **synthesize** knowledge from different areas of the mathematical sciences.

Students considering a major in Actuarial Science need to come to the department to declare their major and be assigned a faculty advisor. All courses selected for the major must be approved by the advisor, and since **required courses are not offered every semester or year**, students should check regularly with their advisors to plan their courses of study in order to finish in a coherent and timely fashion.

Letters & Science Advising

During your time at UWM, you may have multiple members of your success team, including advisors, peer mentors and success coaches. Letters & Science students typically work with at least two different types of advisors as they pursue their degrees: professional college advisors and faculty advisors. L&S college advisors advise across your entire degree program while departmental faculty advisors focus on the major.

College advisors are located in Holton Hall (or virtually for online students) and serve as your primary advisor. They are your point person for your questions about navigating college and completing your degree. College advisors will:

- Assist you in defining your academic and life goals.
- Help you create an educational plan that is consistent with those goals.
- Assist you in understanding curriculum, major and degree requirements for graduation, as well as university policies and procedures.
- Provide you with information about campus and community resources and refer you to those resources as appropriate.
- Monitor your progress toward graduation and completion of requirements.

Faculty advisors mentor students in the major and assist them in maximizing their development in the program. You will begin working with a faculty advisor when you declare your major. Faculty advisors are an important partner and will:

- Help you understand major requirements and course offerings in the department.
- Explain opportunities for internships and undergraduate research and guide you in obtaining those experiences.
- Serve as an excellent resource as you consider potential graduate programs and career paths in your field.

Students are encouraged to meet with both their college advisor and faculty advisor at least once each semester. Appointments are available in-person, by phone or by video.

Currently enrolled students should use the Navigate360 website (https://uwm.navigate.eab.com/) to make an appointment with your assigned advisor or call (414) 229-4654 if you do not currently have an assigned Letters & Science advisor. Prospective students who haven't enrolled in classes yet should call (414) 229-7711 or email let-sci@uwm.edu.

Honors in the Major

Students in Actuarial Science who meet all of the following criteria can be awarded honors in the major upon graduation:

1. A 3.000 cumulative GPA in all UWM graded credits;
2. A 3.500 GPA over all UWM courses counting toward the Actuarial Science major;
3. A 3.500 GPA over all upper-division UWM courses counting toward the Actuarial Science major; and
4. The passing of at least three professional actuarial exams.

Students who believe they may qualify for honors in Actuarial Science should apply to the Mathematical Sciences Department during their last semester of study.

College of Letters and Science Dean's Honor List

GPA of 3.750 or above, earned on a full-time student's GPA on 12 or more graded credits in a given semester.

Honors College Degree and Honors College Degree with Distinction

Granted to graduating seniors who complete Honors College requirements, as listed in the Honors College (https://catalog.uwm.edu/honors-college/) section of this site.

Commencement Honors

Students with a cumulative GPA of 3.500 or above, based on a minimum of 40 graded UWM credits earned prior to the final semester, will receive all-university commencement honors and be awarded the traditional gold cord at the December or May Honors Convocation. Please note that for honors calculation, the GPA is **not** rounded and is truncated at the third decimal (e.g., 3.499).

Final Honors

Earned on a minimum of 60 graded UWM credits: Cum Laude - 3.500 or above; Magna Cum Laude - 3.650 or above; Summa Cum Laude - 3.800 or above.