

BUSINESS: ACTUARIAL SCIENCE, BBA

Actuarial science involves the construction and management of insurance and pension systems using knowledge from statistics/data science, mathematics, economics, finance, and computer science. The field of actuarial science centers on data analytics for risk assessment. The Actuarial Science (<https://wsb.wisc.edu/programs-degrees/undergraduate-bba/academics/majors/#actuarial-science>) major curriculum prepares students for careers with insurance companies, consulting firms, healthcare organizations, and government organizations. Courses offered cover the material of the preliminary examinations of the Casualty Actuarial Society and the Society of Actuaries as well as more advanced subjects such as regression analysis, health analytics, and machine learning. While it is not required for students to sit for actuarial exams, more than 90% of our students pass at least two professional exams before they graduate.

MISSION

The actuarial science program distinguishes itself through leadership, innovation, community, connections, networks, and recognition of the quality of the faculty, the courses, and the students.

RELATED ORGANIZATIONS

Actuarial Club (<https://www.actuarialclubuw.org/>)

Co-Curricular Learning Board (<https://wsb.wisc.edu/faculty-research/academic-departments/risk-insurance/engagement-opportunities/co-curricular-learning-board/>)

HOW TO GET IN

Students wishing to pursue this major must be admitted to the School of Business. Once admitted, students are able to pursue any business major they choose. To find out more about the school's admissions process for undergraduate students, please see Entering the School (<http://guide.wisc.edu/undergraduate/business/#enteringtheschooltext>).

REQUIREMENTS

UNIVERSITY GENERAL EDUCATION REQUIREMENTS

All undergraduate students at the University of Wisconsin–Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (<http://guide.wisc.edu/undergraduate/#requirementsforundergraduatestudytext>) section of the *Guide*.

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| General Education | <ul style="list-style-type: none"> • Breadth—Humanities/Literature/Arts: 6 credits • Breadth—Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits • Breadth—Social Studies: 3 credits • Communication Part A & Part B * • Ethnic Studies * • Quantitative Reasoning Part A & Part B * |
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* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

SCHOOL OF BUSINESS REQUIREMENTS

The Wisconsin Bachelor of Business Administration (BBA) degree program is based on a broad educational foundation combined with courses in business and economics. This curriculum is designed for those students who wish to prepare for careers in business. Students completing any School of Business major (<http://guide.wisc.edu/undergraduate/business/#requirements-text>) are required to satisfy a common set of Pre-Business Requirements, Liberal Studies Requirements, Business Preparatory Requirement, Business Core Requirement, Business Breadth Requirement, and Credits for BBA Degree.

Code	Title	Credits
School of Business BBA Requirements		
Complete requirements: (http://guide.wisc.edu/undergraduate/business/#requirements-text)		
	Pre-Business	
	Liberal Studies	
	Business Prep	
	Business Core	
	Business Breadth	

ACTUARIAL SCIENCE MAJOR REQUIREMENTS

The following courses are required for actuarial science majors. The Risk and Insurance Department also has course sequence information. Please be aware of stated prerequisites for major courses (including business core courses) that need to be completed before taking the course. Specific prerequisites can be found by clicking on the course number below.

Code	Title	Credits
MATH/STAT 431	Introduction to the Theory of Probability ¹	3
or STAT/ MATH 309	Introduction to Probability and Mathematical Statistics I	
or STAT 311	Introduction to Theory and Methods of Mathematical Statistics I	
STAT/MATH 310	Introduction to Probability and Mathematical Statistics II ¹	3
or STAT 312	Introduction to Theory and Methods of Mathematical Statistics II	
ACT SCI 300	Actuarial Science Methods I	1
ACT SCI 301	Actuarial Science Methods II	1

ACT SCI 303	Theory of Interest	3
ACT SCI 650	Actuarial Mathematics I	3
ACT SCI 652	Loss Models I	3
ACT SCI 651 or ACT SCI 653	Actuarial Mathematics II Loss Models II	3
ACT SCI 654	Regression and Time Series for Actuaries ¹	3
or ACT SCI 655	Health Analytics	
or GEN BUS 656	Machine Learning for Business Analytics	
Total Credits		23

¹ The probability, statistics and regression/analytics requirements above for the actuarial science major also fulfill the business analytics requirement found in the BBA Business Preparatory Requirements.

RECOMMENDED ELECTIVES

Code	Title	Credits
MATH 234	Calculus–Functions of Several Variables	4
MATH 340	Elementary Matrix and Linear Algebra	3
R M I 300	Principles of Risk Management	3
FINANCE/ECON 320	Investment Theory	3
COMP SCI 220	Data Science Programming I ¹	4
STAT 303 & STAT 304 & STAT 305	R for Statistics I and R for Statistics II and R for Statistics III	3

¹ Recommended to take either COMP SCI 220 or the STAT 303, STAT 304, STAT 305 sequence.

Students are encouraged to take MATH 234 Calculus–Functions of Several Variables before taking probability (MATH/STAT 431 Introduction to the Theory of Probability, STAT/MATH 309 Introduction to Probability and Mathematical Statistics I, or STAT 311 Introduction to Theory and Methods of Mathematical Statistics I), courses in risk management and insurance; finance; and computer science.

UNIVERSITY DEGREE REQUIREMENTS

Total Degree To receive a bachelor’s degree from UW–Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.

Residency Degree candidates are required to earn a minimum of 30 credits in residence at UW–Madison. “In residence” means on the UW–Madison campus with an undergraduate degree classification. “In residence” credit also includes UW–Madison courses offered in distance or online formats and credits earned in UW–Madison Study Abroad/Study Away programs.

Quality of Work Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.

LEARNING OUTCOMES

1. Recognize and explain the concept of risk, and apply the knowledge to the development of insurance products that are used to manage risk for the consumer as well as the risk of those products on the insurance organization.
2. Describe the actuarial profession, including the major professional organizations, the professional obligations of being an actuary, and the requirements to obtain and maintain a professional actuarial designation.
3. Demonstrate skills in critical thinking, quantitative analysis, and communication, as well as to develop an appreciation for actuarial theory, research, and the link to practical application.
4. Demonstrate the soft skills of being a professional.
5. Communicate their experiences and inspire others across the WSOB learning community.

FOUR-YEAR PLAN

This is a **sample** four-year plan for students directly admitted into the School of Business from high school. We encourage all students to consult with their academic advisor to develop an individualized plan that meets their specific needs.

Freshman			
Fall	Credits Spring	Credits Summer	Credits
MATH 221	5 MATH 222	4 ACCT I S 100	3
ECON 101	4 ECON 102	4	
GEN BUS 110	1 PSYCH 202	3	
Communications A	3 Ethnic Studies	3	
13		14	3

Sophomore			
Fall	Credits Spring	Credits Summer	Credits
MATH 234	4 STAT/ MATH 309, 311, or MATH 431	3 M H R 300 or MARKETNG 300	3
ACT SCI 301	1 R M I 300	3	
ACT SCI 303	3 FINANCE/ ECON 300	3	
OTM 300	3 ACCT I S 211	3	
GEN BUS 360	3 M H R 300 or MARKETNG 300	3	
14		15	3

Junior			
Fall	Credits Spring	Credits	
ACT SCI 300	1 ACT SCI 653	3	

ACT SCI 652	3 ACT SCI 654, 655, or GEN BUS 656	3
STAT/ MATH 310 or 312	3 Humanities, Social Science, or Literature	3
Humanities, Social Science, or Literature	3 Humanities, Social Science, or Literature	3
Elective	3 Communications B	3-4
13		15-16

Senior

Fall	Credits Spring	Credits
ACT SCI 650	3 ACT SCI 651	3
ACT SCI 654, 655, or GEN BUS 656	3 FINANCE 330	3
Science	3 GEN BUS 301	3
Ethics ¹	4 Science	3
FINANCE/ ECON 320	3 Elective	3
16		15

Total Credits 121-122

¹ Students must choose one of the following courses: PHILOS 241 Introductory Ethics, PHILOS 243 Ethics in Business, PHILOS 341 Contemporary Moral Issues, ENVIR ST/PHILOS 441 Environmental Ethics

ADVISING AND CAREERS

ADVISING

Advising is an integral part of any student's educational journey in the Wisconsin School of Business Undergraduate Program. Starting at Student Orientation, Advising, and Registration (SOAR), we encourage all students to connect with academic advisors. Business academic advisors have a wealth of knowledge about courses on campus, as well as policies and procedures.

Business career coaches help students with career exploration, internships, resumes, job search, interviewing and more. We encourage students to connect with their career coach once they arrive on campus.

Business academic advisors and career coaches are passionate about student success. Students experiencing academic difficulty or personal struggles are encouraged to talk to their advisor about how their individual situation may affect their academic performance.

ASSIGNED ACADEMIC AND CAREER COACHES

For admitted business students, academic advisors and career coaches are assigned by academic major. If you have more than one major, you may have more than one assigned advisor and coach. You can find your assigned advisor and coach by logging into your Starfish portal through MyUW.

For students not yet admitted to the Wisconsin School of Business, we have a team of pre-business advisors available to you.

ACCESSING ADVISING

Drop-in advising and scheduled appointments are available for admitted business students. Pre-business students may also schedule an appointment with a pre-business academic advisor or utilize drop-in academic advising.

For more information on accessing academic advising, please see our academic advising page (<https://bus.wisc.edu/current-student-resources/bba/academic-support-resources/academic-advising/>).

For more information on accessing career coaching, please see our career coaching page (<https://bus.wisc.edu/current-student-resources/bba/careers-internships/career-advising/>).

Actuarial program faculty offer advising nights every fall semester to help students plan their course sequencing and professional exams.

CAREERS

Actuaries are problem solvers with expertise in understanding and managing financial risk. They use historical information and models to help predict the future. Actuaries may specialize in life and health (risk of illness, disability or death), pensions (develop and analyze retirement programs) or property and casualty (personal property risks and risks associated with businesses).

Some of our actuarial students utilize the analytical and technical skills they learn in the actuarial program and apply those skills to pursue data analytics or data science as a career. They may do this in the risk and insurance industry or in any industry that has the need to analyze, project and make decisions from large amounts of data.

Find out more about common industries and essential skills needed to be an actuary on the Undergraduate Actuarial Science website (<https://wsb.wisc.edu/programs-degrees/undergraduate-bba/academics/majors/#actuarial-science>).

PEOPLE

FACULTY AND STAFF IN RISK AND INSURANCE

For more information about the faculty and their research interests, please visit the directory (<https://bus.wisc.edu/faculty-research/faculty-directory/>).

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actuarial exams before graduation in order to obtain an internship and/or job.

PROFESSIONAL CERTIFICATION/LICENSURE DISCLOSURE (NC-SARA)

The United States Department of Education requires institutions that provide distance education to disclose information for programs leading to professional certification or licensure about whether each program meets state educational requirements for initial licensure or certification. Following is this disclosure information for this program:

The requirements of this program meet Certification/Licensure in the following states:

Wisconsin

The requirements of this program do not meet Certification/Licensure in the following states:

The requirements of this program have not been determined if they meet Certification/Licensure in the following states:

Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wyoming; District of Columbia; American Samoa, Guam, Northern Mariana Islands, Puerto Rico, U.S. Virgin Islands

RESOURCES AND SCHOLARSHIPS

If you are good at math and are interested in pursuing a career as an actuary, apply for our High School Actuarial Scholarship (<https://bus.wisc.edu/faculty-research/academic-departments/risk-and-insurance/actuarial-profession-awareness/>).

ACCREDITATION

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AACSB International—The Association to Advance Collegiate Schools of Business (<http://www.aacsb.edu/>)

Accreditation status: Accredited. Next accreditation review: 2021–2022.

CERTIFICATION/LICENSURE

CERTIFICATION/LICENSURE

There are several exams and credentials from the Casualty Actuarial Society (<http://www.casact.org/>) and the Society of Actuaries (<https://www.soa.org>) that we prepare students to obtain during their undergraduate career. Students are encouraged to pass at least two