ACTUARIAL SCIENCE MAJOR (B.S.)

Actuarial Science utilizes mathematics, statistics, and finance to estimate risk, price products, and determine required reserves in the insurance, banking, and financial services industries. Actuarial Science majors gain skills to understand, evaluate, and manage complex financial products and to communicate short- and long-term risks. Candidates develop deep technical skills, such as the valuation of probabilistic financial instruments and the time value of money. Actuarial Science majors also gain practical experience by applying statistical software and mathematical models to analyze data and forecast a variety of potential outcomes to inform business decisions. Throughout, candidates will develop communication skills needed to interact effectively with stakeholders from a broad spectrum of business backgrounds.

Bentley offers specialized courses to help students prepare for up to four of the professional credentialing exams administered by the Society of Actuaries (https://www.soa.org/) or the Casualty Actuarial Society (https://www.casact.org/). Bentley also offers courses that fulfill all Validation by Educational Experience (VEE) requirements for these societies. Most students complete at least two credentialing exams and one internship during their undergraduate years, and the department maintains close contact with many of our alumni/alumnae who work in this field.

For further information about degree requirement policies and guidelines, see the Degree Requirements (catalog.bentley.edu/undergraduate/degree-requirements/) page.

Major Requirements

Prerequisite Course

Course	Title	Credits
MA 131	Calculus I	3
or MA 131L	Calculus I with Lab	

Program Requirements

Course	Title	Credits
Required Courses:		
MA 139	Calculus II	3
or MA 139L	Calculus II with Lab	
MA 214	Intermediate Applied Statistics	3
MA 233	Calculus III	3
MA 239	Linear Algebra	3
MA 252	Regression Analysis	3
MA 263	Continuous Probability for Risk Management	3
MA 310	Actuarial Topics in Probability and Risk Management	3
or MA 357	Mathematical Theory of Interest	
Select two of the following:		6
MA 243	Discrete Probability	
MA 310	Actuarial Topics in Probability and Risk Management [1]	
MA 335	Financial Calculus and Derivative Pricing	
MA 343	The Mathematics of Discrete Options Pricing	
MA 352	Mathematical Statistics	
MA 357	Mathematical Theory of Interest [1]	
MA 374	Fundamentals of Short-Term Actuarial Mathematics	
MA 375	Fundamentals of Long-Term Actuarial Mathematics	
MA 376	Advanced Long Term Actuarial Mathematics	
MA 380	Introduction to Generalized Linear Models and Survival Analysis in Business	
Total Credits		**27**

[1] If not already used in the major.

General Degree Requirements

Foundations for Success (15 Credits)

Course	Title	Credits
FDS 100	Falcon Discovery Seminar	3
Communications and Writing		
Select one from:		
EMS 101	Critical Reading and Writing	3
or EMS 101L	Critical Reading and Writing with Lab	
or EMS 102	Critical Reading and Writing for Multilingual Students	
or EMS 102L	Critical Reading and Writing for Multilingual Students with Lab	
And one from:		
EMS 104	Multimodal Communication	3
or EMS 105	Multimodal Communication for Multilingual Students	
Information Technology		
CS 100	Solving Business Problems with Information Technology	3
Mathematical Sciences		
Select one from:		
MA 105	Mathematical Foundations for Business	3
or MA 105L	Mathematical Foundations for Business with Lab	
or MA 107	Applied Calculus for Business	
or MA 107L	Applied Calculus for Business with Lab	
or MA 131	Calculus I	
or MA 131L	Calculus I with Lab	
Total Credits		**15**

Context and Perspectives (18 Credits)

Course	Title	Credits
Students must take six courses, one in each category of Context and Perspectives:		
Culture, Change, and Behavior (catalog.bentley.edu/undergraduate/degree-requirements/context-and-perspectives/#culturechangeandbehavior)		
Globalization (catalog.bentley.edu/undergraduate/degree-requirements/context-and-perspectives/#globalization)		

Institutions and Power (catalog.bentley.edu/undergraduate/degree-requirements/context-and-perspectives/#institutionsandpower)	
Race, Gender, and Inequality (catalog.bentley.edu/undergraduate/degree-requirements/context-and-perspectives/#racegenderandinequality)	
Scientific Inquiry (catalog.bentley.edu/undergraduate/degree-requirements/context-and-perspectives/#scientificinquiry)	
Values, Ethics, and Society (catalog.bentley.edu/undergraduate/degree-requirements/context-and-perspectives/#valuesethicsandsociety)	
Total Credits	**18**

Business Dynamics/Business Administration Minor (18 Credits)

Course	Title	Credits
All courses are required:		
AC 115	Introduction to Financial Reporting and Analysis	3
EC 111	Principles of Microeconomics	3
FI 118	Introduction to Finance	3
LA 100	Business Law	3
MG 116	Human Dynamics in Organizations	3
ST 113	Business Statistics	3
Total Credits		**18**

Communication Intensive

All students are required to take a three-credit course designated as a Communication Intensive. This requirement can be met within a variety of course subjects in both Arts & Sciences and Business. Communication Intensive courses are designated with a "Communication Intensive" course tag in Workday. *Transfer students with a minimum of 30 credits will be waived from the Communication Intensive requirement.*

Please note that certain majors have an additional three-credit Communication Intensive built into their major requirements, separate from the general CI requirement.

Additional Requirements

Unrestricted Electives (42 Credits)

Course	Title	Credits
Select 14 elective courses		42
Total Credits		**42**

Total: 120 Credits