Actuarial Science BS

Campus Address: 408 Social Sciences and Business Building (SSB)
Main Number: 314-516-5353
Fax Number: 314-516-5352

Bachelor of Science (B.S.) in Actuarial Science

The B.S. in Actuarial Science provides students with the quantitative skills used by actuaries. Students are required to complete courses offered by the Department of Mathematics and Computer Science, the Department of Economics and the College of Business Administration. Students take coursework in calculus, financial mathematics, statistics, economics, econometrics, and finance. The program is designed to provide students with a solid preparation to take exams and to complete validation by educational experience requirements needed to begin a career as an actuary.

Certificate in Actuarial Studies

The Certificate in Actuarial Studies is designed to provide the education needed for entry level employment in the actuarial profession.

Career Outlook in Actuarial Science

Graduates with this skill set are hired by insurance firms, consulting firms, and financial institutions. Actuarial training is also transferable to broader jobs in data science and analytics. Job prospects for those with actuarial degrees are expected to remain strong over the next decade.

For more information on careers in actuarial science, visit the website of the Society of Actuaries (https://www.soa.org/Member/).

Bachelor of Science in Actuarial Science

General Education Requirements

Students must satisfy the university general education requirements. Many of the courses for the degree may be used to fulfill math proficiency, information literacy, social science, and math and life/natural sciences requirements. There is no foreign language requirement for the degree.

Satisfactory/Unsatisfactory Option

Courses required for the major may not be taken on a satisfactory/unsatisfactory basis.

Required Courses

Candidates for the B.S. in Actuarial Science degree must complete a program of 62 credit hours of required courses. Each required course must be completed with a grade of C- or better and students must maintain a GPA of 2.0 for courses required for the degree.

ACCTNG 2400	Fundamentals of Financial Accounting	3
CMP SCI 1250	Introduction to Computing	3
ECON 1001	Principles of Microeconomics (MOTR ECON 102)	3
ECON 1002	Principles of Macroeconomics (MOTR ECON 101)	3
ECON 4100	Introduction to Econometrics	4
ECON 4120	Time Series Econometrics for Economics and Finance	4
or ECON 4130	Business and Economic Forecasting	
FINANCE 3500	Financial Management	3
FINANCE 3520	Investments	3
FINANCE 3521	Financial Engineering: Applying Derivatives	3
INFSYS 2800	Information Systems Concepts and Applications	3
MATH 1800	Analytic Geometry and Calculus I	5
MATH 1900	Analytic Geometry and Calculus II	5
MATH 2000	Analytic Geometry and Calculus III	5
MATH 1320	Introduction to Probability and Statistics	3
or ECON 3100	Economic Data and Statistics	
MATH 4010	Financial Mathematics I	3
MATH 4020	Financial Mathematics II	3
MATH 4200	Mathematical Statistics I	3
MATH 4210	Mathematical Statistics II	3
Total Hours		**62**

Recommended Courses

Students are strongly encouraged to take as many of the following courses as possible.

CMP SCI 2250	Programming and Data Structures	3
ECON 3001	Intermediate Microeconomics	3
ECON 3002	Intermediate Macroeconomics	3
ECON 4110	Applied Econometrics	4
ECON 4995	Internship in Actuarial Science	1-3
or MATH 4995	Internship in Actuarial Science	
FINANCE 3561	Principles of Insurance	3
MATH 2450	Elementary Linear Algebra	3
MATH 4260	Introduction to Stochastic Processes	3

Learning Outcomes

Upon completion of the program, graduates will be able to:

- Learn basic programming techniques for use in actuarial applications.
- Understand the fundamental concepts of financial mathematics and how those concepts are applied in present and accumulated values for various streams of cash flow.
- Develop the fundamental probability tools for quantitatively assessing risk.
- Use the concepts of statistical inference, such as estimation and hypothesis testing, required for actuarial modeling.
- Become familiar with regression models to analyze and forecast time series data.
- Use economic reasoning to explain individual decision-making and economy-wide outcomes.
- Understand and apply accounting concepts and knowledge of financial instruments and how they are utilized.

- Develop knowledge of the theoretical basis of actuarial models and the application of those models to insurance and other financial risks.

Sample Four Year Plan

First Year

Fall	Hours	Spring	Hours
INTDSC 1003[1]	1	INFSYS 1800	3
ENGL 1100	3	MATH 1320	3
MATH 1800	5	MATH 1900	5
CMP SCI 1250	3	EXPLORE - Humanities and Fine Arts	3
CORE - Communication Proficiency	3		
	15		**14**

Second Year

Fall	Hours	Spring	Hours
ECON 1001	3	ACCTNG 2400	3
INFSYS 2800	3	ECON 1002	3
MATH 2000	5	MATH 4020	3
MATH 4010	3	MATH 4200	3
		EXPLORE - Humanities and Fine Arts	3
	14		**15**

Third Year

Fall	Hours	Spring	Hours
ECON 4100	4	FINANCE 3521	3
ENGL 3100 or 3120	3	EXPLORE - Social Sciences	3
FINANCE 3500	3	EXPLORE - Humanities and Fine Arts	3
MATH 4210	3	Cultural Diversity Requirement	3
CORE - US History and Government	3	Recommended course, elective or minor	3
	16		**15**

Fourth Year

Fall	Hours	Spring	Hours
ECON 4130	4	Recommended course, elective or minor	3
FINANCE 3561	3	Recommended course list, elective or minor	3
Recommended course list, elective or minor	3	Recommended course list, elective or minor	3
Recommended course list, elective or minor	3	Recommended course list, elective or minor	3
Recommended course list, elective or minor	3	Recommended course list, elective or minor	3
	16		**15**

Total Hours: 120

[1] INTDSC 1003 is required only for first-time freshmen and transfer students with less than 24 college credits.

PLEASE NOTE: This plan is an example of what a four year plan could look like for a typical student. Placement exam scores in math as well as the completion of coursework may change the plan. It should not be used in the place of regular academic advising appointments. All students are encouraged to meet with their advisor each semester. All requirements are subject to change.