

# ACTUARIAL SCIENCE, BA

Risk analysts and actuaries are expected to earn professional designation from either the Society of Actuaries (<http://www.soa.org>) (life and health insurance) or the Casualty Actuarial Society (<http://www.casact.org>) (property and casualty insurance). These societies administer a series of examinations that lead to the risk analyst designation, or for actuaries, first to the designation of associate and then to fellow. The initial exams are the same for both societies. The courses required for the major and the minor will aid the student in preparing for the first two of the professional societies' examinations and will also satisfy their Validation by Educational Experience (VEE) (<https://www.soa.org/education/exam-req/edu-vee.aspx>) requirements in economics and corporate finance.

Actuarial Science involves the application of probability theory and risk management to the areas of life and health insurance, property and casualty insurance, pension plans, and other employee benefit plans. Risk analysts and actuaries, who evaluate the long-term financial impact of these plans on both the issuing company and the purchaser or beneficiary of the plan, are employed by insurance companies, consulting firms, large corporations, and governmental agencies. The major in actuarial science emphasizes the mathematical theory that underlies risk evaluation.

## Admission

Advanced placement in mathematics is possible for well-prepared students.

## Standards

All courses presented for the major and the minor(s) must be completed with grades of C- or higher with an overall GPA of 2.0 or higher. A maximum of two grades of C- may be presented for the major. Repeated courses in the major or minor require specific approval of the department chair. The average grade for all courses taken in actuarial science and mathematics must be C- or higher. Note that although the major only requires a grade of C- or above for graduation, ECON 101 PRINCIPLES OF ECONOMICS I, ECON 102 PRINCIPLES OF ECONOMICS II, FIN 311 PRINCIPLES OF FINANCE, and FIN 321 INVESTMENTS must be passed with a grade of B- or above in order to fulfill Validation by Educational Experience (VEE) requirements for the CAS (Casualty Actuarial Society) and the SOA (Society of Actuaries). Students with a grade of C+ or below in ECON 101 PRINCIPLES OF ECONOMICS I, ECON 102 PRINCIPLES OF ECONOMICS II, FIN 311 PRINCIPLES OF FINANCE, or FIN 321 INVESTMENTS are strongly encouraged to retake the course in order to earn a grade of B- or above. Students working on the Statistics VEE are encouraged to discuss this with their advisor to make sure their courses align with the SOA's new VEE transition rules.

## Requirements

- At least four courses in Actuarial Science must be completed at Roosevelt University.
- The BA degree requires a Finance minor (for non-Business majors) (<http://catalog.roosevelt.edu/undergraduate/business/finance-minor-non-business-majors>).
- Students completing a Bachelor of Arts degree in Actuarial Science must take at least one professional exam prior to graduation. Proof should be submitted to the chair.

- All credit must be approved by the department to be applied toward the major.

## Recommendations

- Appropriate supporting courses in computer science, economics, and finance are recommended.
- Students should prepare to take an actuarial professional exam early in their degree plan, as this is often a requirement for actuarial internships. Both ACSC 367 FINANCIAL MATH and ACSC 347 PROBABILITY THEORY correspond to the content of the first two of these actuarial professional exams; the corresponding seminar courses ACSC 380FM ACTUARIAL SCIENCE SEMINAR:EXAM FM/2 and ACSC 380P ACTUARIAL SCIENCE SEMINAR: EXAM P/1 aid in exam prep.
- ACSC 390 INDUSTRIAL RESEARCH PROBLEMS is recommended as an experiential learning course, as is ECON 235 ELEMENTARY STATISTICS LAB.
- Students are encouraged to do an actuarial, financial, programming, or statistical internship prior to graduation.

The major sequence for the Bachelor of Arts degree is given below.

Code	Title	Credit Hours
<b>Core</b>		
ACSC 101	ACTUARIAL CAREER	1
MATH 231	CALCULUS I	5
MATH 232	CALCULUS II	5
MATH 233	CALCULUS III	3
ACSC 246	LINEAR ALGEBRA	3
ACSC 347	PROBABILITY THEORY	3
ACSC 348	MATHEMATICAL STATISTICS	3
ACSC 349	REGRESSION & TIME SERIES	3
ACSC 367	FINANCIAL MATH	3
ACSC 380FM	ACTUARIAL SCIENCE SEMINAR:EXAM FM/2	3
	or ACSC 380P ACTUARIAL SCIENCE SEMINAR: EXAM P/1	
CST 150	COMPUTER SCIENCE I	4
Select two of the following:		6
ACSC 309	DATA MINING	
ACSC 323	COOPERATION AND COMPETITION – GAME THEORY AND APPLICATIONS	
ACSC 328	LINEAR PROGRAMMING & OPTIMIZATION	
ACSC 366	ADVANCED EXCEL METHODS	
ACSC 369	MODELS FOR LIFE CONTINGENCIES	
ACSC 378	TOPICS IN ACTUARIAL MATH	
ACSC 380FM	ACTUARIAL SCIENCE SEMINAR:EXAM FM/2	
	or ACSC 380 ACTUARIAL SCIENCE SEMINAR: EXAM P/1	
ACSC 390	INDUSTRIAL RESEARCH PROBLEMS	
<b>VEE requirement (part of Finance minor)</b>		
ECON 101	PRINCIPLES OF ECONOMICS I (fulfills portion of social science gen ed requirement)	3

ECON 102	PRINCIPLES OF ECONOMICS II (fulfills portion of social science gen ed requirement)	3
FIN 311	PRINCIPLES OF FINANCE	3
FIN 321	INVESTMENTS	3
Additional Courses for the Finance Minor		9
General Education, University Writing Requirement, and Electives		58
Total Credit Hours		121

- Students must have at least 18 credit hours (of the 60 credit hours above) at the 300 level.
- Students may transfer in no more than 70 credit hours from community colleges.
- Students must take their final 30 hours at Roosevelt University. Note that some majors have additional requirements for RU hours.
- Students must have a grade point average of 2.0 or higher to graduate. Note that some majors have additional GPA requirements.
- Students may apply no more than 51 hours in the major (BA) or 57 hours in the major (BS)

## CORE Requirements (General Education)

Code	Title	Credit Hours
<b>First Year Success Course or Transfer Success Course</b>		
FYS 101 or TRS 101	FIRST YEAR SUCCESS COURSE TRANSFER SUCCESS 101	1
<b>Communication Requirement</b>		
ENG 101	COMPOSITION I: CRITICAL READING & WRITING	3
ENG 102	COMPOSITION II: INTRODUCTION TO ACADEMIC RESEARCH	3
LIBS 201	WRITING SOCIAL JUSTICE ( Transfer students with acceptable communication credit may be exempt from this requirement.)	3
<b>Ideas Across Disciplines</b>		
3 credits in coursework categorized as Ideas.		3
<b>Humanities and Fine and Performing Arts</b>		
9 credits from the following subject areas: African-American Studies, Art History, English (excluding ENG 101 and ENG 102), History, Languages, Music, Philosophy, Theatre, Speech and Women's and Gender Studies		9
<b>Mathematics</b>		
MATH 110	QUANTITATIVE LITERACY (or above)	3
<b>Science</b>		
One biological science and one physical science required (at least one must be a four-hour lab). (Not applicable for science majors)		7-8
<b>Social Sciences</b>		
9 credits from the following subject areas: African-American Studies, Anthropology, Economics, History, Journalism, Philosophy, Political Science, Psychology, Sociology and Women's and Gender Studies		9
<b>Experiential Learning</b>		
6 credits from coursework categorized as Experiential Learning.		
Total Credit Hours		41-42

These quantitative requirements also apply to degrees in the College of Arts and Sciences:

- Students must earn a minimum of 120 semester hours.
- Students may apply no more than 60 credit hours of 100-level courses toward the degree.
- Students must apply no fewer than 60 credit hours of 200- and 300-level courses toward the degree.

Your degree map is a general guide suggesting courses to complete each term on the academic pathway to your degree. It is based on the most current scheduling information from your academic program. Your program's degree map is reviewed annually and updated as schedules change (although you retain the same course requirements as long as you are continuously enrolled in your degree program).

Always work closely with your academic advisor to understand curriculum requirements and scheduling, as each student's academic plan can look slightly different.

### Year 1

Fall	Credit Hours	Spring	Credit Hours
ENG 101	3	ENG 102	3
ACCT 210	3	Ideas Across Disciplines	3
MATH 121	3	ECON 101	3
ACSC 101	1	CST 150	4
Physical Science <sup>2</sup>	3	MATH 122	3
FYS 101	1		
14		16	

### Year 2

Fall	Credit Hours	Spring	Credit Hours
LIBS 201	3	ACSC 246	3
ECON 102	3	FIN 301	3
MATH 231	5	FIN 311	3
Humanities #1	3	MATH 232	5
General Elective <sup>1</sup>	1		
15		14	

### Year 3

Fall	Credit Hours	Spring	Credit Hours
MATH 233	3	Humanities Course #2	3
ACSC 367	3	ACSC 380FM or 380P	3
ACSC 349	3	FIN 321	3
General Elective <sup>1</sup>	3	Experiential Learn	3
General Elective <sup>1</sup>	3	General Elective	3
15		15	

### Year 4

Fall	Credit Hours	Spring	Credit Hours
ACSC 347	3	ACSC 348	3
FIN 387 or FIN 3XX <sup>3</sup>	3	ACSC 3XX <sup>3</sup>	3

BIOL 111 or 112 <sup>2</sup>	4 General Elective <sup>1</sup>	3
Humanities #3	3 General Elective <sup>1</sup>	3
Experiential Learning #2 <sup>4</sup>	3 General Elective <sup>1</sup>	3
	16	15

Total Credit Hours 120

- <sup>1</sup> Or course towards an optional Minor.
- <sup>2</sup> One Natural Science course must have a lab.
- <sup>3</sup> Any course at the 300 Level within the discipline.
- <sup>4</sup> Experiential Learning class must be 200/300 level. Students are encouraged to take ACSC 390 and ECON 234/235 sequence to satisfy their Experiential Learning requirements.