

# BS in Statistics: Actuarial Science (695224) MAP Sheet

Physical and Mathematical Sciences, Statistics

For students entering the degree program during the 2024-2025 curricular year

University Core and Graduation Requirements				Suggested Sequence of Courses			
<b>University Core Requirements:</b>				<b>FRESHMAN YEAR</b>		<b>JUNIOR YEAR</b>	
<b>Requirements</b>	<b># Classes</b>	<b>Hours</b>	<b>Classes</b>	<u>1st Semester</u>		<u>5th Semester</u>	
<b>Religion Cornerstones</b>				First Year Writing	3.00	STAT 330	3.00
Teachings and Doctrines of the Book of Mormon	1	2.00	REL A 275	MATH 112	4.00	STAT 344	3.00
Jesus Christ and the Everlasting Gospel	1	2.00	REL A 250	STAT 121	3.00	Req 4 Elective (IS 520 recommended)	3.00
Foundations of the Restoration	1	2.00	REL C 225	STAT 130	0.50	WRTG 316	3.00
The Eternal Family	1	2.00	REL C 200	UNIV 101	2.00	Open Electives	1.50
<b>BYU Foundations for Student Success</b>				Religion Cornerstone Class	2.00	GE Religion	2.00
Foundations for Student Success	1	2.00	UNIV 101	<b>Total Hours:</b>	<b>14.50</b>	<b>Total Hours:</b>	<b>15.50</b>
<b>The Individual and Society</b>				<u>2nd Semester</u>		<u>6th Semester</u>	
American Heritage	1 to 2	3.00-6.00	from approved list	American Heritage	3.00	STAT 346	3.00
Global and Cultural Awareness	1	3.00	from approved list	MATH 113	4.00	Req 7 Elective 1	3.00
<b>Skills</b>				STAT 274	3.00	GE Arts, Letters, Sciences	3.00
First Year Writing	1	3.00	from approved list	STAT 240	3.00	GE Arts, Letters, Sciences	3.00
Advanced Written and Oral Communications	1	3.00	WRTG 316	Religion Cornerstone Class	2.00	GE Religion	2.00
Quantitative Reasoning	1	4.00	MATH 112*	<b>Total Hours:</b>	<b>15.00</b>	Open Electives	1.00
Languages of Learning (Math of Language)	1	4.00	MATH 112*	Dept. recommendation: Register for and pass Exam FM.		<b>Total Hours:</b>	<b>15.00</b>
<b>Arts, Letters and Sciences (Complete 6 of 7)</b>				<b>SOPHMORE YEAR</b>			
Civilization 1	1	3.00	from approved list	<u>3rd Semester</u>		<b>SENIOR YEAR</b>	
Civilization 2	1	3.00	from approved list	GE Arts, Letters, Sciences	3.00	<u>7th Semester</u>	
Arts	1	3.00	from approved list	STAT 230	3.00	STAT 348	3.00
Letters	1	3.00	from approved list	STAT 250	3.00	Req 7 Elective 2 (STAT 446 recommended)	3.00
Biological Science	1	3.00	from approved list	Global and Cultural Awareness	3.00	GE Religion	2.00
Physical Science	2	3.00-7.00	from approved list	Religion Cornerstone Class	2.00	Open Electives	7.00
Social Science	1	3.00	from approved list	<b>Total Hours:</b>	<b>14.00</b>	<b>Total Hours:</b>	<b>15.00</b>
<b>Core Enrichment: Electives</b>				<u>4th Semester</u>		<u>8th Semester</u>	
Religion Electives	3 to 4	6.00	from approved list	MATH 213	2.00	STAT 444	3.00
Open Electives	Variable	Variable	personal choice	MATH 215	1.00	GE Arts, Letters, Sciences	3.00
<b>Graduation Requirements:</b>				STAT 340	3.00	Open Electives	6.00
Minimum residence hours required		30.00		GE Arts, Letters, Sciences	3.00	Requirement 7 Elective 3	3.00
Minimum hours needed to graduate		120.00		Open Electives	2.00	<b>Total Hours</b>	<b>15.00</b>
				Religion Cornerstone Class	2.00		
				<b>Total Hours:</b>	<b>16.00</b>		
*These classes fill both university core and program requirements							

Students must pass one exam of the Society of Actuaries (SOA), usually Exam FM, before declaring an actuarial science major. Students should declare another statistics emphasis until they pass an exam (Applied Statistics and Analytics offers an unofficial "pre-actuarial" path with early courses).

**Requirement 1 —Complete 3 Courses**

STAT 121 - Principles of Statistics 3.0  
STAT 130 - Intro to Statistics Department 0.5  
STAT 274 - Theory of Interest 3.0

**Requirement 2 —Complete 5 Courses**

Statistics core courses:

STAT 230 - Analysis of Variance 3.0  
STAT 240 - Probability and Inference 1 3.0  
STAT 250 - Applied R Programming 3.0  
STAT 330 - Statistical Modeling 2 3.0  
STAT 340 - Probability and Inference 2 3.0

**Requirement 3 —Complete 4 Courses**

Mathematical foundation courses:

MATH 112 - Calculus 1 4.0  
MATH 113 - Calculus 2 4.0  
MATH 213 - Elementary Linear Algebra 2.0  
MATH 215 - Computational Linear Algebra 1.0

**Requirement 4 —Complete 3 hours**

Recommended course: Actuarial science majors should take IS 520, but all of the courses are valuable.

C S 110 - How to Program 3.0  
C S 111 - Intro to Computer Science 3.0  
HLTH 440 - Statistical Computing in Epi 3.0  
IS 520 - Spreadsheet Automation 3.0

**Requirement 5 —Complete 3 Courses**

STAT 344 - Long-term Actuarial Math 3.0  
STAT 346 - Short-term Actuarial Math 3.0  
STAT 348 - Stat for Risk Modeling 3.0

**Requirement 6 —Complete 3 hours**

Note: If both courses are taken in requirement 6, one can be used as an elective in requirement 7. Students interested in life, finance, or pensions should take 444 and those interested in health or property/casualty should take 446.

STAT 444 - Adv Long-term Act Math 3.0  
STAT 446 - Adv Short-term Act Math 3.0

**Requirement 7 —Complete 9 hours**

Note: Courses used to fulfill Requirements 4 and 6 will not double count here. Note: No more than 3.0 hours of any combination of STAT 496R and STAT 497R can be used for this requirement.

ACC 200 - Principles of Accounting 3.0  
ECON 110 - Econ Principles & Problems 3.0  
FIN 201 - Principles of Finance 3.0  
IS 515 - Spreadsheets for Bus Analysis 3.0  
IS 520 - Spreadsheet Automation 3.0  
STAT 234 - Methods of Survey Sampling 3.0  
STAT 251 - Intro to Bayesian Statistics 3.0  
STAT 281 - Data Visualization 3.0  
STAT 286 - Data Science Ecosystems 3.0  
STAT 381 - Statistical Computing 3.0  
STAT 386 - Data Science Process 3.0  
STAT 395R - Special Topics in Applied Stat - You may take up to 3.0 credit hours 1.0v  
STAT 435 - Nonparametric Stat Methods 3.0  
STAT 437 - Applications in Biostatistics 3.0  
STAT 444 - Adv Long-term Act Math 3.0  
STAT 446 - Adv Short-term Act Math 3.0

STAT 451 - Applied Bayesian Statistics 3.0  
STAT 466 - Intro to Reliability 3.0  
STAT 469 - Analysis of Correlated Data 3.0  
STAT 482 - Data Science Capstone 1 3.0  
STAT 483 - Data Science Capstone 2 3.0  
STAT 486 - Machine Learning 3.0  
STAT 495R - Special Topics in Statistics - You may take up to 3.0 credit hours 1.0v  
STAT 496R - Academic Internship - You may take up to 3.0 credit hours 0.5v  
STAT 497R - Intro to Research - You may take up to 3.0 credit hours 0.5v  
STAT 531 - Experimental Design 3.0

Recommended Courses: Students should take Econ 110, Acc 200, and Fin 201 to complete the Society of Actuaries VEEs. Additionally, IS 515 and IS 520 are valuable in the daily work of an actuary.

**THE DISCIPLINE:**

An actuary is a statistician who analyzes the financial consequences of risk. Actuaries use statistics, mathematics, and financial theory to study uncertain future events, especially those of concern to insurance and pension programs. They evaluate the likelihood of those events and design creative ways to reduce the likelihood and decrease the impact of adverse events that do occur. Their work designing and managing programs that control risk requires a combination of strong analytical skills, business knowledge, and understanding of human behavior.

**CAREER OPPORTUNITIES:**

Actuaries enjoy excellent job security, high incomes, and a low-stress work environment. Careers in actuarial science are consistently ranked among the top professions. Competent actuaries are highly recruited and can have many professional opportunities. Actuaries are employed across a wide variety of industries and typically become established in one of the following career tracks: health, property/casualty, or life insurance, consulting to one of those industries, enterprise risk management, quantitative finance and investment management, or retirement benefits. By focusing on the development of data analysis skills, actuaries can also easily transition to business analytics settings

**ACTUARIAL EXAMS:**

Actuaries are required to demonstrate their proficiency by passing a series of competency exams offered by one or more of the principal actuarial societies. It typically takes 6-10 years to pass all of the exams; most actuarial interns are required to have passed at least one of these exams as a condition for employment. The BYU Actuarial Science degree provides students with the opportunity to study significant portions of the material covered in the first eight exams accepted by the Society of Actuaries and six accepted by the Casualty Actuarial Society (the two major actuarial societies in the United States).

The correspondence between the actuarial exams and available BYU course work is roughly as follows:

Joint SOA/CAS Exams:

Exam P: Stat 240, 340 (full coverage) Exam FM: Stat 274 (full coverage)  
SOA Exams: Exam FAM: Stat 344, 346 (full coverage) Exam SRM/PA: Stat 330, 348 (full coverage)  
Exam ALTAM: Stat 444 (full coverage) Exam ASTAM: 446 (full coverage)  
Exam ATPA: Stat 251, 330, 348, 451 (some coverage)

CAS Exams:

Online Course 3: Stat 330, 348 (full coverage) MAS-I: Stat 348 (full coverage)  
MAS-11: Stat 251, 348 (full coverage)  
Exam 5: Stat 346, 446 (some coverage)  
In addition to the exams the societies accept the following sets of courses for the Validation by Educational Experience (VEE) credit:

Mathematical Statistics VEE: Stat 121, 346  
Finance and Accounting VEE: Fin 201, Acc 200  
Economics VEE: Econ 110

**MAP DISCLAIMER**

While every reasonable effort is made to ensure accuracy, there are some student populations that could have exceptions to listed requirements. Please refer to the university catalog and your college advisement center/department for complete guidelines.

**DEPARTMENT INFORMATION**

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**ADVISEMENT CENTER INFORMATION**

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