BS in Actuarial Science (695224) MAP Sheet

Physical and Mathematical Sciences, Statistics

For students entering the degree program during the 2021-2022 curricular year.

University Core and Graduation Requirements

University Core Requirements:

Requirements	#Classes	Hours	Classes
Religion Cornerstones			
Teachings and Doctrine of The Book of Mormon	1	2.0	from approved list
Jesus Christ and the Everlasting Gospel	1	2.0	from approved list
Foundations of the Restoration	1	2.0	REL C 225
The Eternal Family	1	2.0	from approved list
The Individual and Society			
American Heritage	1-2	3-6.0	ECON 110* and one course from approved list
Global and Cultural Awareness	1	3.0	from approved list
Skills			
First Year Writing	1	3.0	from approved list
Advanced Written and Oral Communications	1	3.0	from approved list
Quantitative Reasoning	1	4.0	MATH 112*
Languages of Learning (Math or Language)	1	4.0	MATH 112*
Arts, Letters, and Sciences			
Civilization 1	1	3.0	from approved list
Civilization 2	1	3.0	from approved list
Arts	1	3.0	from approved list
Letters	1	3.0	from approved list
Biological Science	1	3-4.0	from approved list
Physical Science	1	3.0	from approved list
Social Science	1	3.0	from approved list
Core Enrichment: Electives			
Religion Electives	3-4	6.0	from approved list
Open Electives	Variable	Variable	personal choice

*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (7 hours overlap)

Graduation Requirements:

Minimum residence hours required	30.0
Minimum hours needed to graduate	120.0

Suggested Sequence of Courses

FRESHMAN YEAR

1st Semester

First Year Writing	3.0
Social Science	3.0
MATH 112 (FWSpSu)	4.0
STAT 121	3.0
STAT 130	0.5
Religion Cornerstone course	2.0
Total Hours	**15.5**

2nd Semester

American Heritage	3.0
MATH 113 (FWSpSu)	4.0
STAT 274	3.0
STAT 230	3.0
Religion Cornerstone course	2.0
Total Hours	**15.0**

Dept. recommendation: Register for and pass Exam FM.

SOPHOMORE YEAR

3rd Semester

STAT 240	3.0
STAT 250	3.0
Physical Science	3.0
Global and Cultural Awareness	3.0
Religion Cornerstone course	2.0
Total Hours	**14.0**

4th Semester

MATH 213	2.0
MATH 215	1.0
STAT 340	3.0
Letters	3.0
Religion Cornerstone course	2.0
Open Electives	4.0
Total Hours	**15.0**

Department recommendation: Register for and pass Exam P. Internship during Spring/Summer. Much of the hiring occurs the previous fall.

JUNIOR YEAR

5th Semester

STAT 330	3.0
STAT 377	3.0
Requirement 4 Elective #1	1.5
Advanced Written & Oral Communication	3.0
Civilization 1	3.0
Religion Elective	2.0
Total Hours	**15.5**

6th Semester

STAT 477	3.0
Requirement 4 Elective #2	1.5
Civilization 2	3.0
Biological Science	3.0
Religion Elective	2.0
Open Elective	3.0
Total Hours	**15.5**

Department recommendation: Internship during Spring/Summer. Much of the hiring occurs the previous fall.

SENIOR YEAR

7th Semester

Requirement 6 Elective #1	3.0
Requirement 6 Elective #2	3.0
Arts	3.0
Religion Elective	2.0
Open Elective	4.0
Total Hours	**15.0**

8th Semester

Requirement 6 Elective #3	3.0
STAT 475 - will count for Requirement 6 Elective #4	3.0
Open Electives	9.0
Total Hours	**15.0**

Note 1: Students should take STAT 130 the semester they declare themselves as a Statistics Major.

Note 2: The sequence of courses suggested may not fit the circumstances of every student. Students should contact their college advisement center for help in outlining an efficient schedule.

Note 3: Students are encouraged to complete an average of 15 credit hours each semester or 30 credit hours each year, including spring and/or summer terms, to meet the 120 credit minimum needed to graduate. Taking fewer credits substantially increases the number of semesters to graduate.

Note 4: Open elective credits can be classes of your choosing, classes for a minor, or credits that have already been earned through AP classes, transfer credits, etc.

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2021-2022 Program Requirements (53.5 Credit Hours)

No more than 3 hours of credit below C- is allowed in major courses.

Students must pass one exam of the Society of Actuaries (SOA), usually Exam FM, before declaring an actuarial science major.

REQUIREMENT 1 Complete 3 courses

STAT 121 - Principles of Statistics	3.0
STAT 130 - Introduction to the Department of Statistics	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 - Introduction to Regression	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 3.0 hours from the following course(s)

STAT 124 - SAS Base Programming Skills	1.5
STAT 125 - Introduction to Operating Systems, Linux/Unix, and Shell Prog	1.5
STAT 126 - Introduction to Python Programming	1.5
STAT 224 - Applied SAS Programming	1.5
STAT 226 - SQL	1.5

REQUIREMENT 5 Complete 6.0 hours from the following course(s)

NOTE: IF ALL 3 COURSES ARE TAKEN IN REQUIREMENT 5, ONE CAN BE USED AS AN ELECTIVE. WHILE IT IS BEST TO TAKE ALL THREE, STUDENTS INTERESTED IN LIFE INSURANCE OR INVESTMENTS SHOULD TAKE AT LEAST 377 AND 475 AND THOSE INTERESTED IN HEALTH AND PROPERTY/CASUALTY INSURANCE SHOULD TAKE AT LEAST 475 AND 477.

STAT 377 - Statistical Models for Financial Economics	3.0
STAT 475 - Life Contingencies	3.0
STAT 477 - Statistical Distributions for Actuarial Modeling and Data Analy	3.0

REQUIREMENT 6 Complete 12.0 hours from the following course(s)

NOTE: COURSES USED IN REQUIREMENTS 4 AND 5 WILL NOT DOUBLE COUNT HERE.

ACC 200 - Principles of Accounting	3.0
ECON 110 - Economic Principles and Problems	3.0
ECON 380 - (Not currently offered)	
ECON 381 - Intermediate Macroeconomics	3.0
ECON 382 - (Not currently offered)	
ECON 388 - Introduction to Econometrics	3.0
ECON 450 - Financial Economics	3.0
ECON 588 - Advanced Econometrics	3.0
FIN 201 - Principles of Finance	3.0
IS 515 - Spreadsheets for Business Analysis	3.0
IS 520 - Business Programming and Spreadsheet Automation	3.0
STAT 124 - SAS Base Programming Skills	1.5
STAT 125 - Introduction to Operating Systems, Linux/Unix, and Shell Prog	1.5
STAT 126 - Introduction to Python Programming	1.5
STAT 224 - Applied SAS Programming	1.5
STAT 226 - SQL	1.5
STAT 234 - Methods of Survey Sampling	3.0
STAT 251 - Introduction to Bayesian Statistics	3.0
STAT 377 - Statistical Models for Financial Economics	3.0
STAT 381 - Statistical Computing	3.0
STAT 420 - Big Data Science 1	3.0
STAT 421 - Big Data Science 2	3.0
STAT 426 - Data Science Methods and Applications in Statistics	3.0
STAT 435 - Nonparametric Statistical Methods	3.0
STAT 451 - Applied Bayesian Statistics	3.0
STAT 462 - Quality Control and Industrial Statistics	3.0
STAT 466 - Introduction to Reliability	3.0
STAT 469 - Analysis of Correlated Data	3.0
STAT 475 - Life Contingencies	3.0
STAT 477 - Statistical Distributions for Actuarial Modeling and Data Analy	3.0
STAT 495R - Special Topics in Statistics	3.0v
You may take up to 3 credit hours.	
STAT 496R - Academic Internship: Statistics	9.0v
You may take up to 3 credit hours.	
STAT 497R - Introduction to Statistical Research	3.0v
You may take up to 3 credit hours.	
STAT 531 - Experimental Design	3.0

Recommended Courses: Students should take Econ 110, Acc 200, Fin 201, and Stat 477 to complete the Society of Actuaries VEEs. Additionally, IS 515 and IS 520 are exceptionally 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; virtually all 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 six exams offered by the Society of Actuaries and three are 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:

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2021-2022

Exam P: Stat 240, 340 (full coverage)
Exam FM: Stat 274 (full coverage)
Exam IFM: Stat 377 (about 80% coverage) - was 90%
Exam LTAM: Stat 475 (about 75% coverage) - was 50%
Exam STAM: Stat 240, 340, 477 (about 80% coverage) - was 90%
Exam SRM: Stat 330, 426 (about 95% 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, 477
Finance and Accounting VEE: Fin 201, Acc 200
Economics VEE: Econ 110

SAS CERTIFICATION EXAMS:

SAS Certified Base Programmer and SAS Certified Advanced Programmer. Students can take the SAS Certification exams after completing Stat 124 and 224. Information and exam registration is available at http://support.sas.com/certify/creds/index.html.

SAS/BYU Applied Statistics and Advanced SAS Programming Certificate. Students who earn a B or higher in the applied and computing core classes (Stat 124, 224, 230, 330, 381) are eligible to receive a certificate jointly issued by SAS and BYU which can be listed on a resume. More information is available at http://statistics. byu.edu/content/sas-certificate-opportunities.

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.

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