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

**Physical and Mathematical Sciences, Statistics**

For students entering the degree program during the 2023-2024 curricular year.

#### University Core and Graduation Requirements

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<td><strong>Arts, Letters, and Sciences</strong></td>
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#### Core Enrichment: Electives

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<tr>
<th>Requirement</th>
<th>#Classes</th>
<th>Hours</th>
<th>Classes</th>
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<tbody>
<tr>
<td>Religion Electives</td>
<td>3-4</td>
<td>6-0</td>
<td>from approved list</td>
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<tr>
<td>Open Electives</td>
<td>Variable</td>
<td>Variable</td>
<td>personal choice</td>
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**Note:** 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 (FWip6u): 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 (FWip6u): 4.0
- STAT 274: 3.0
- STAT 240: 3.0
- Religion Cornerstone course: 2.0
- **Total Hours:** 15.0

**Note:** Dept. recommendation: Register for and pass Exam FM.

**JUNIOR YEAR**

#### 5th Semester

- STAT 330: 3.0
- IS 520: 3.0
- Civilization 1: 3.0
- Biological Science: 3.0
- Religion Elective: 2.0
- Open Elective: 1.0
- **Total Hours:** 15.0

**Note:** Department recommendation: Internship during Spring/Summer. Many employers come to campus in early fall to hire interns for the following summer.

#### SOPHOMORE YEAR

#### 3rd Semester

- STAT 230: 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
- Requirement 7 Elective #2: 3.0
- Religion Elective: 2.0
- Open Elective: 4.0
- **Total Hours:** 18.0

#### 5th Semester

- MATH 244: 3.0
- STAT 446: 3.0
- Requirement 7 Elective #3: 3.0
- Religion Elective: 2.0
- Open Elective: 4.0
- **Total Hours:** 15.0

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

**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.
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 412 - Principles of Statistics 3.0
STAT 431 - Intro to Statistics Department 0.5
STAT 474 - 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 6 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
STAT 286 - Data Science Ecosystems 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 - Stats 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 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 3.0
STAT 483 - Data Science Capstone 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)
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

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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.