



BS in ACTUARIAL SCIENCE (695224) MAP Sheet

Department of Statistics

For students entering the degree program during the 2016–2017 curricular year.

| UNIVERSITY CORE AND GRADUATION REQUIREMENTS | | | | PROGRAM REQUIREMENTS (54 total hours) | | |
|---|-----------------|--------------|---|--|--|--|
| UNIVERSITY CORE REQUIREMENTS | | | | No more than three hours of credit below C- is allowed in major courses. (Continued from previous column) | | |
| <u>Requirements</u> | <u>#Classes</u> | <u>Hours</u> | <u>Classes</u> | Stat 466 Introduction to Reliability 3.0 Stat 469 Applied Time Series & Forecasting 3.0 Stat 475 Life Contingencies 3.0 Stat 477 Statistical Distributions 3.0 Stat 495R Special Topics in Statistics 3.0V Stat 496R Academic Internship: Statistics 9.0V Stat 497R Introduction to Statistical Research 3.0V B. Complete 6 hours from the following: | | |
| Religion Cornerstones | | | | Acc 200 Principles of Accounting 3.0 Acc 310 Principles of Accounting 2 3.0 Econ 380 Intermediate Price Theory 1 3.0 Econ 381 Intermediate Macroeconomics 3.0 Econ 382 Intermediate Price Theory 2 3.0 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 Bus Prgrmmng & Sprdsht Automtn 3.0 Stat 151 Introduction to Bayesian Statistics 3.0 Stat 234 Methods of Survey Sampling 3.0 Stat 377 Statistical Models for Financial Econ 3.0 Stat 381 Statistical Computing 3.0 Stat 435 Nonparametric Statistical Methods 3.0 Stat 451 Applied Bayesian Statistics 3.0 Stat 462 Quality Control & Industrial Statistics 3.0 Stat 466 Introduction to Reliability 3.0 Stat 469 Applied Time Series & Forecasting 3.0 Stat 475 Life Contingencies 3.0 Stat 477 Statistical Distributions 3.0 Stat 495R Special Topics in Statistics 3.0V Stat 496R Academic Internship: Statistics 9.0V Stat 497R Introduction to Statistical Research 3.0V Stat 531 Experimental Design 3.0 Stat 538 Survival Analysis 3.0 Note: Courses used in List A will not double count in List B. Note: No more than 3 credit hours of Stat 496R or Stat 497R may be counted toward this requirement. | | |
| Teachings and Doctrine, Book of Mormon | 1 | 2.0 | Rel A 275 | Students must pass Exam P of the Society of Actuaries (SOA) jointly administered as Exam 1 by the Casualty Actuarial Society (CAS) before declaring an actuarial science major. | | |
| Jesus Christ & the Everlasting Gospel | 1 | 2.0 | Rel A 250 | Complete the following preparation core courses: Math 112* Calculus 1 4.0 Math 113 Calculus 2 4.0 | | |
| Foundations of the Restoration | 1 | 2.0 | Rel C 225 | Complete one course from the following: Stat 121 Principles of Statistics 3.0 Stat 151 Intro to Bayesian Statistics 3.0 Stat 201 Statistics for Engineers & Scientists 3.0 Note: Students who have passed the AP statistics exam or an introductory statistics course should not take Stat 121. | | |
| The Eternal Family | 1 | 2.0 | Rel C 200 | Complete the following statistics core courses: Stat 123 Introduction to R Programming 1.5 Stat 124 SAS Base Programming Skills 1.5 Stat 223 Applied R Programming 1.5 Stat 224 Applied SAS Programming 1.5 Stat 230 Analysis of Variance 3.0 Stat 240 Discrete Probability 3.0 Stat 290 Communication of Statistical Results 1.0 Stat 330 Introduction to Regression 3.0 Stat 340 Inference 3.0 | | |
| The Individual and Society | | | | Complete the following: Econ 110* Economic Principles and Problems 3.0 Stat 274 Theory of Interest 3.0 Complete 18 credit hours from the following two lists, with a minimum of 12 hours from list A: A. Complete 12 hours from the following: | | |
| Citizenship | | | | Stat 151 Introduction to Bayesian Statistics 3.0 Stat 234 Methods of Survey Sampling 3.0 Stat 377 Statistical Models for Financial Econ 3.0 Stat 381 Statistical Computing 3.0 Stat 435 Nonparametric Statistical Methods 3.0 Stat 451 Applied Bayesian Statistics 3.0 Stat 462 Quality Control & Industrial Statistics 3.0 (Continued in next column) | | |
| American Heritage | 1–2 | 3–6.0 | Econ 110* and one course from approved list | Stat 121 Principles of Statistics 3.0 Stat 151 Intro to Bayesian Statistics 3.0 Stat 201 Statistics for Engineers & Scientists 3.0 | | |
| Global & Cultural Awareness | 1 | 3.0 | from approved list | Stat 123 Introduction to R Programming 1.5 Stat 124 SAS Base Programming Skills 1.5 Stat 223 Applied R Programming 1.5 Stat 224 Applied SAS Programming 1.5 Stat 230 Analysis of Variance 3.0 Stat 240 Discrete Probability 3.0 Stat 290 Communication of Statistical Results 1.0 Stat 330 Introduction to Regression 3.0 Stat 340 Inference 3.0 | | |
| Skills | | | | B. Complete 6 hours from the following: | | |
| Effective Communication | | | | Acc 200 Principles of Accounting 3.0 Acc 310 Principles of Accounting 2 3.0 Econ 380 Intermediate Price Theory 1 3.0 Econ 381 Intermediate Macroeconomics 3.0 Econ 382 Intermediate Price Theory 2 3.0 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 Bus Prgrmmng & Sprdsht Automtn 3.0 Stat 151 Introduction to Bayesian Statistics 3.0 Stat 234 Methods of Survey Sampling 3.0 Stat 377 Statistical Models for Financial Econ 3.0 Stat 381 Statistical Computing 3.0 Stat 435 Nonparametric Statistical Methods 3.0 Stat 451 Applied Bayesian Statistics 3.0 Stat 462 Quality Control & Industrial Statistics 3.0 Stat 466 Introduction to Reliability 3.0 Stat 469 Applied Time Series & Forecasting 3.0 Stat 475 Life Contingencies 3.0 Stat 477 Statistical Distributions 3.0 Stat 495R Special Topics in Statistics 3.0V Stat 496R Academic Internship: Statistics 9.0V Stat 497R Introduction to Statistical Research 3.0V Stat 531 Experimental Design 3.0 Stat 538 Survival Analysis 3.0 Note: Courses used in List A will not double count in List B. Note: No more than 3 credit hours of Stat 496R or Stat 497R may be counted toward this requirement. | | |
| First-Year Writing | 1 | 3.0 | from approved list | Recommended Courses: It is recommended that students take Econ 110 and Fin 201 to complete the Society of Actuaries Economics and Corporate Finance VEEs. | | |
| Adv Written & Oral Communication | 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 and 2 | 2 | 6.0 | from approved list | | | |
| Arts | 1 | 3.0 | from approved list | | | |
| Letters | 1 | 3.0 | from approved list | | | |
| Scientific Principles & Reasoning | | | | | | |
| Biological Science | 1–2 | 3–5.0 | from approved list | | | |
| Physical Science | 1–2 | 3–7.0 | from approved list | | | |
| Social Science | 1 | 3.0 | Econ 110* | | | |
| Core Enrichment: Electives | | | | | | |
| Religion Electives | 3–4 | 6.0 | from approved list | | | |
| Open Electives | Variable | Variable | personal choice | | | |
| GRADUATION REQUIREMENTS: | | | | | | |
| Minimum residence hours required | | 30.0 | | | | |
| Minimum hours needed to graduate | | 120.0 | | | | |

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

FOR UNIVERSITY CORE OR PROGRAM QUESTIONS CONTACT THE ADVISEMENT CENTER

Physical and Mathematical Sciences College Advisement Center

N-181 ESC

Brigham Young University, Provo, UT 84602

Telephone: (801) 422-2674

FACULTY ADVISOR:

Del T. Scott

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BS in ACTUARIAL SCIENCE (695224)
2016–2017

Suggested Sequence of Courses:

FRESHMAN YEAR

1st Semester

| | |
|---|-------------|
| 1 st Year Writing or American Heritage | 3.0 |
| Econ 110 | 3.0 |
| Math 112* (FWSpSu) | 4.0 |
| Stat 121 | 3.0 |
| Religion Cornerstone course | 2.0 |
| Total Hours | 15.0 |

2nd Semester

| | |
|---|-------------|
| American Heritage or 1 st Year Writing | 3.0 |
| Math 113 (FWSpSu) | 4.0 |
| Stat 274 | 3.0 |
| Stat 240 | 3.0 |
| Religion Cornerstone course | 2.0 |
| Total Hours | 15.0 |

Dept. recommendation: Register for and pass Exam FM.

SOPHOMORE YEAR

3rd Semester

| | |
|-------------------------------|-------------|
| Stat 230 | 3.0 |
| Stat 340 | 3.0 |
| Stat 372 | 1.0 |
| Phy S 100 | 3.0 |
| Global and Cultural Awareness | 3.0 |
| Religion Cornerstone course | 2.0 |
| Total Hours | 15.0 |

Dept. recommendation: Register for and pass Exam P.

4th Semester

| | |
|-----------------------------|-------------|
| Stat 290 | 1.0 |
| Stat 330 | 3.0 |
| Stat 123 or 124 | 1.5 |
| Stat 223 or 224 | 1.5 |
| Letters | 3.0 |
| Religion Cornerstone course | 2.0 |
| General electives | 3.0 |
| Total Hours | 15.0 |

Note 1: 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 2: Students are encouraged to complete an average of 15 credit hours each semester or 30 credit hours each year, which could include spring and/or summer terms. Taking fewer credits substantially increases the cost and the number of semesters to graduate.

Department recommendation: Internship during Spring/Summer.

JUNIOR YEAR

5th Semester

| | |
|---------------------------------------|-------------|
| Stat 123 or 124 | 1.5 |
| Stat 223 or 224 | 1.5 |
| Biological Science | 3.0 |
| Advanced Written & Oral Communication | 3.0 |
| Civilization 1 | 3.0 |
| Religion elective | 2.0 |
| General electives | 1.0 |
| Total Hours | 15.0 |

6th Semester

| | |
|--------------------|-------------|
| Actuarial elective | 3.0 |
| Actuarial elective | 3.0 |
| Actuarial elective | 3.0 |
| Civilization 2 | 3.0 |
| Religion elective | 2.0 |
| General electives | 1.0 |
| Total Hours | 15.0 |

Department recommendation: Internship during Spring/Summer.

SENIOR YEAR

7th Semester

| | |
|--------------------|-------------|
| Actuarial elective | 3.0 |
| Actuarial elective | 3.0 |
| Actuarial elective | 3.0 |
| Arts | 3.0 |
| Religion elective | 2.0 |
| General electives | 1.0 |
| Total Hours | 15.0 |

8th Semester

| | |
|--------------------|-------------|
| General electives | 15.0 |
| Total Hours | 15.0 |

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 three 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: enterprise risk management, quantitative finance and investment, life insurance, health insurance, and retirement benefits. By focusing on 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 five exams offered by the Society of Actuaries and 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:

- Exam P:* Stat 240, 340, 372 (full coverage)
- Exam FM:* Stat 274 (full coverage)
- Exam MFE:* Stat 377 (about 90% coverage)
- Exam MLC:* Stat 475 (about 50% coverage)
- Exam C:* Stat 240, 340, 477 (about 90% coverage)

In addition to the exams the societies accept the following sets of courses for the Validation by Educational Experience (VEE) credit:

- Applied Statistical Methods VEE:* Stat 330 (has Stat 230 prereq.)
- Corp Finance VEE:* Fin 201
- Economics VEE:* Econ 110

ADVISING:

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, 424) are eligible to receive a certificate jointly issued by SAS and BYU which can be listed on a resume. More information is available at statistics.byu.edu/content/sas-certificate-opportunities.

Internships. The department maintains a list of companies that have hired BYU Actuarial Science students as interns in the last three years at: statistics.byu.edu/content/actuarial-company-database.

Department of Statistics
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