BS in STATISTICS: Applied Statistics and Analytics Emphasis (695234) MAP Sheet

Department of Statistics

For students entering the degree program during the 2015–2016 curricular year.

UNIVERSITY CORE AND GRADUATION REQUIREMENTS

UNIVERSITY CORE REQUIREMENTS

Requirements	#Classes	Hours	Classes
Religion Cornerstones			
Teachings and Doctrine, Book of Mormon	1	2.0	Rel A 275
Jesus Christ & the Everlasting Gospel	1	2.0	Rel A 250
Foundations of the Restoration	1	2.0	Rel C 225
The Eternal Family	1	2.0	Rel C 200
The Individual and Society			
Citizenship			
American Heritage	1–2	3–6.0	Econ 110* and one course from approved list
Global & Cultural Awareness	1	3.0	from approved list
Skills			
Effective Communication			
First-Year Writing	1	3.0	from approved list
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

PROGRAM REQUIREMENTS (54 total hours)

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

Complete the following preparation core courses:

Math	112*	Calculus 1	4.0
Math	113	Calculus 2	4.0

Complete one course from the following:

Stat	121	Principles of Statistics	3.0
Stat	151	Introduction 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.

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

Complete the following:

Econ	110*	Economic Principles and Problems	3.0
Stat	424	Statistical Computing 2	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:

Stat	151	Introduction to Bayesian Statistics	3.0
Stat	234	Methods of Survey Sampling	3.0
Stat	274	Theory of Interest	3.0
Stat	370	Statistical Theory for Actuaries	3.0
Stat	377	Statistical Models for Financial Econ	3.0
Stat	431	Experimental Design	3.0
Stat	435	Nonperametric 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

(Continued in next column.)

(Continued from previous column.)

Stat	469	Applied Time Series & Forecasting	3.0
Stat	475	Life Contingencies	3.0
Stat	477	Statistical Distributions for Modeling	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	500	Business Career Essentials	1.5
Stat	538	Survival Analysis	3.0

B. Complete 6 hours from the following:

C S	142	Introduction to Computer Programming	3.0
IS	515	Spreadsheets for Business Analysis	3.0
IS	520	Bus Prgrmmng & Sprdsht Automtn	3.0
Math	313	Elementary Linear Algebra	3.0
Math	314	Calculus of Several Variables	3.0
Stat	151	Intro to Bayesian Statistics	3.0
Stat	234	Methods of Survey Sampling	3.0
Stat	274	Theory of Interest	3.0
Stat	370	Statistical Theory for Actuaries	3.0
Stat	377	Statistical Models for Financial Econ	3.0
Stat	431	Experimental Design	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 for Modeling	3.0
Stat	495R	Special Topics in Statistics	3.0V
Stat	495R	Special Topics in Statistics	9.0V
Stat	497R	Introduction to Statistical Research	3.0V
Stat	500	Business Career Essentials	1.5
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 may be counted toward this requirement.

***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
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BS in STATISTICS: Applied Statistics and Analytics Emphasis (695234)
2015–2016

Suggested Sequence of Courses:

FRESHMAN YEAR

1st Semester	
1st Year Writing or American Heritage	3.0
Econ 110 (FWSpSu)	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 1st Year Writing	3.0
Math 113 (FWSpSu)	4.0
Phy S 100	3.0
Stat 230	3.0
Religion Cornerstone course	2.0
Total Hours	**15.0**

SOPHOMORE YEAR

3rd Semester	
Stat 240	3.0
Biological Science	3.0
Civilization 1	3.0
Global and Cultural Awareness	3.0
Religion Cornerstone course	2.0
General electives	1.0
Total Hours	**15.0**

4th Semester	
Stat 123 or Stat 124	1.5
Stat 223 or Stat 224	1.5
Stat 290	1.0
Stat 330	3.0
Civilization 2	3.0
Religion Cornerstone course	2.0
General electives	3.0
Total Hours	**15.0**

Department recommendation: Internship during Spring/Summer

JUNIOR YEAR

5th Semester	
Stat 123 or Stat 124	1.5
Stat 223 or Stat 224	1.5
Stat 340	3.0
Advanced Written and Oral Communication	3.0
Religion elective	2.0
General electives	4.0
Total Hours	**15.0**

6th Semester	
Stat 424	3.0
Statistics elective	3.0
Letters	3.0
Religion elective	2.0
General electives	4.0
Total Hours	**15.0**

Department recommendation: Internship during Spring/Summer

SENIOR YEAR

7th Semester	
Statistics elective	3.0
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Statistics elective	3.0
Arts	3.0
Religion elective	2.0
General electives	1.0
Total Hours	**15.0**

8th Semester	
Statistics elective	3.0
Statistics elective	3.0
General electives	9.0
Total Hours	**15.0**

THE DISCIPLINE:

Statisticians apply sophisticated methods to increasingly massive data sets to discover insights into important business, government, and health policy questions. The curriculum and degrees offered through the Department of Statistics are designed to equip students with decision-making skills for careers as professional statisticians in industrial organizations, government agencies, insurance companies, pharmaceutical companies, universities, and research institutes.

Statisticians in business find information in big data and design experiments to model, predict, and optimize business outcomes. Students who are quantitatively oriented and interested in business, government, and health are well prepared by this emphasis. The Applied Statistics and Analytics emphasis includes a greater number of statistical analysis and data management courses and fewer of the mathematics courses required for graduate study in statistics.

CAREER OPPORTUNITIES:

Typical employment upon graduation would include statisticians in government agencies (for example, the U.S. Census Bureau), database administrators focusing on SAS programming, and entry-level analysts involved in collecting, analyzing, and reporting results (for example, in market research). A feature of this emphasis is the large number of electives that allow students to customize their preparation toward the professional area of their interest or the emerging fields of analytics and data science. Students can deepen their expertise in experimental design, regression modeling, Bayesian inference, computing and big data, survey sampling, quality control, reliability and survival analysis.

ADVISING:

ASQ Certified Quality Process Analyst (CQPA). Students interested in employment as quality analysts should take Stat 462 to prepare for certification by the ASQ as described in asq.org/higher-education/why-quality/cqpa-certification-competitive-edge.html. Highly motivated students may also prepare on their own with the materials and practice exams through ce.byu.edu/cw/prodev/.

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. Several government agencies offer internship programs suitable for students in the Applied Statistics and Analytics emphasis: the Joint Program in Survey Methodology (jpsm.umd.edu/undergraduate/topic/junior-fellow-program), National Institute of Standards and Technology (www.nist.gov/ohrm/staffing/internship-program.cfm), National Institutes of Health—Summer Institute for Training in Biostatistics (www.nhlbi.nih.gov/funding/training/redbook/sibsweb.htm). Local internships are also available at Qualtrics, Utah Transit Authority, Intermountain Healthcare, Adobe Predictive Analytics, and inc.com.

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.

Note 3: Students ***must*** have the statistics core completed before their senior year in order to graduate within four years.

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