



# BS in STATISTICS: Statistical Science Emphasis (695220) MAP Sheet

## Department of Statistics

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

UNIVERSITY CORE AND GRADUATION REQUIREMENTS				PROGRAM REQUIREMENTS (54 total hours)	
UNIVERSITY CORE REQUIREMENTS				No more than 3 hours of credit below C- is allowed in major courses. <b>Complete the following preparation core courses:</b> Math 112* Calculus 1 4.0 Math 113 Calculus 2 4.0 <b>Complete one course from the following:</b> Stat 121 Principles of Statistics 3.0 Stat 151 Introduction to Bayesian Statistics 3.0 Stat 201 Statistics for Engineers & Scientists 3.0 <b>Note:</b> Students who have passed the AP statistics exam or an introductory statistics course should not take Stat 121. <b>Complete the following statistics core courses:</b> 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 <b>Complete the following:</b> Math 313 Elementary Linear Algebra 3.0 Math 314 Calculus of Several Variables 3.0 <b>Complete 18 credit hours from the following two lists, with a minimum of 12 hours from list A:</b> <b>A. Complete at least 12 hours from the following:</b> 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 424 Statistical Computing 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 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 (Continued in next column)	
				(Continued from previous column) 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 496R Academic Internship: Statistics 9.0V (3 hours only will be accepted) Stat 497R Introduction to Statistical Research 3.0V Stat 538 Survival Analysis 3.0 <b>B. Complete up to 6 hours from the following:</b> C S 142 Introduction to Computer Programming 3.0 IS 515 Spreadsheets for Business Analysis 3.0 IS 520 Spreadsheet Automation 3.0 Math 334 Ordinary Differential Equations 3.0 Math 341 Theory of Analysis 1 3.0 Math 342 Theory of Analysis 2 3.0 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 424 Statistical Computing 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 and Industrial Statistics 3.0 Stat 466 Introduction to Reliability 3.0 Stat 469 Applied Time Series and 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 538 Survival Analysis 3.0 <b>Note:</b> Courses used in List A will not double count in List B. <b>Recommended Courses:</b> It is <b>strongly recommended</b> that students interested in graduate study in statistics choose electives to prepare for the BYU BS/MS statistics integrated program by meeting with the statistics graduate coordinator.	
Requirements	#Classes	Hours	Classes		
<b>Religion Cornerstones</b>					
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		
<b>The Individual and Society</b>					
Citizenship					
American Heritage	1–2	3–6.0	from approved list		
Global & Cultural Awareness	1	3.0	from approved list		
<b>Skills</b>					
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*		
<b>Arts, Letters, and Sciences</b>					
Civilization 1 and 2					
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	from approved list		
<b>Core Enrichment: Electives</b>					
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 (4 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  
206 TMCB

Brigham Young University, Provo, UT 84602  
Telephone: (801) 422-7054

**BS in STATISTICS: Statistical Science Emphasis (695220)**  
2015–2016

**Suggested Sequence of Courses:**

**FRESHMAN YEAR**

1st Semester

1 <sup>st</sup> Year Writing or American Heritage	3.0
Math 112 (FWSpSu)	4.0
Stat 121	3.0
Arts	3.0
Religion Cornerstone course	2.0
<b>Total Hours</b>	<b>15.0</b>

2nd Semester

American Heritage or 1 <sup>st</sup> Year Writing	3.0
Math 113 (FWSpSu)	4.0
Stat 230	3.0
Religion Cornerstone course	2.0
Phy S 100	3.0
<b>Total Hours</b>	<b>15.0</b>

**SOPHOMORE YEAR**

3rd Semester

Math 313 (FWSpSu)	3.0
Stat 240	3.0
Global and Cultural Awareness	3.0
Biological Science	3.0
Religion Cornerstone course	2.0
General electives	1.0
<b>Total Hours</b>	<b>15.0</b>

4th Semester

Math 314 (FWSpSu)	3.0
Stat 123 or Stat 124	1.5
Stat 223 or Stat 224	1.5
Stat 290	1.0
Stat 330	3.0
Letters	3.0
Religion Cornerstone course	2.0
<b>Total Hours</b>	<b>15.0</b>

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
Adv. Written and Oral Communication	3.0
Civilization 1	3.0
Religion elective	2.0
General elective	1.0
<b>Total Hours</b>	<b>15.0</b>

6th Semester

Statistics elective	3.0
Social Science	3.0
Civilization 2	3.0
Religion elective	2.0
General electives	3.0
<b>Total Hours</b>	<b>14.0</b>

Department recommendation: Internship during Spring/Summer

**SENIOR YEAR**

7th Semester

Statistics elective	3.0
Statistics elective	3.0
Statistics elective	3.0
Religion elective	2.0
General electives	4.0
<b>Total Hours</b>	<b>15.0</b>

8th Semester

Statistics elective	3.0
Statistics elective	3.0
General electives	9.0
<b>Total Hours</b>	<b>15.0</b>

**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.

While the Statistical Science emphasis is designed to prepare students for graduate programs, all students in the Statistical Science emphasis leave BYU with a resourceful, disciplined, and flexible approach to statistics, an enhanced capacity to analyze and interpret data, a broadened perspective on the impact of data in decision-making, and a well-developed capacity for understanding and communicating statistical results.

**CAREER OPPORTUNITIES:**

The increase of big data and analytics across disciplines is creating new challenges and opportunities for statisticians. The Statistical Science emphasis prepares students to enter competitive graduate programs in statistics. The technical tools statisticians acquire are useful in many areas and for this reason a statistics degree is also excellent preparation for public administration. Recent alumni who did not go to graduate school are working at Adobe, Saks Fifth Avenue, Qualtrics, Milliman, Pariveda Solutions, and the Utah Governor's Office of Planning and Budget.

**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](http://statistics.byu.edu/content/sas-certificate-opportunities).

**Internships.** Several government agencies offer internship programs suitable for students in the Statistical Science emphasis: the Joint Program in Survey Methodology ([www.jpsm.umd.edu/undergraduate/topic/junior-fellow-program](http://www.jpsm.umd.edu/undergraduate/topic/junior-fellow-program)), National Institute of Standards and Technology ([www.nist.gov/ohrm/staffing/internship-program.cfm](http://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](http://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.

Department of Statistics  
223 TMCB  
Brigham Young University, Provo, UT 84602  
Telephone: (801) 422-4505