

# BS in Statistics: Applied Statistics & Analytics (695234) MAP Sheet

Physical and Mathematical Sciences, Statistics

For students entering the degree program during the 2018-2019 curricular year.



University Core and Graduation Requirements				Suggested Sequence of Courses			
<b>University Core Requirements:</b>							
<b>Requirements</b>	<b>#Classes</b>	<b>Hours</b>	<b>Classes</b>				
<b>Religion Cornerstones</b>							
Teachings and Doctrine of The Book of Mormon	1	2.0	REL A 275				
Jesus Christ and 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>							
American Heritage	1-2	3-6.0	from approved list				
Global and Cultural Awareness	1	3.0	from approved list				
<b>Skills</b>							
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*				
<b>Arts, Letters, and Sciences</b>							
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	1-2	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				
*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (7 hours overlap)							
<b>Graduation Requirements:</b>							
Minimum residence hours required		30.0					
Minimum hours needed to graduate		120.0					
				<b>FRESHMAN YEAR</b>			
				<u>1st Semester</u>			
				1st Year Writing or American Heritage	3.0		
				Social Science	3.0		
				MATH 112 (FWSpSu)	4.0		
				STAT 121	3.0		
				Religion Cornerstone course	2.0		
				<b>Total Hours</b>	<b>15.0</b>		
				<u>2nd Semester</u>			
				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		
				<b>Total Hours</b>	<b>15.0</b>		
				<b>SOPHOMORE YEAR</b>			
				<u>3rd Semester</u>			
				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		
				<b>Total Hours</b>	<b>15.0</b>		
				<u>4th Semester</u>			
				STAT 123 or STAT 124	1.5		
				STAT 223 or STAT 224	1.5		
				STAT 330	3.0		
				Civilization 2	3.0		
				Religion Cornerstone course	2.0		
				General electives	3.0		
				General electives	1.0		
				<b>Total Hours</b>	<b>15.0</b>		
				<b>JUNIOR YEAR</b>			
				<u>5th Semester</u>			
				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		
				<b>Total Hours</b>	<b>15.0</b>		
				<u>6th Semester</u>			
				Statistics elective	3.0		
				Statistics elective	3.0		
				Letters	3.0		
				Religion elective	2.0		
				General Elective	4.0		
				<b>Total Hours</b>	<b>15.0</b>		
				<b>SENIOR YEAR</b>			
				<u>7th Semester</u>			
				Statistics elective	3.0		
				Statistics elective	3.0		
				Arts	3.0		
				Religion elective	2.0		
				General electives	4.0		
				<b>Total Hours</b>	<b>15.0</b>		
				<u>8th Semester</u>			
				Statistics elective	3.0		
				Statistics elective	3.0		
				General electives	9.0		
				<b>Total Hours</b>	<b>15.0</b>		
				<b>Note 1:</b> 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.			
				<b>Note 2:</b> 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.			
				<b>Note 3:</b> Students must have the statistics core completed before their senior year in order to graduate within four years.			

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### 2018-2019 Program Requirements (47 Credit Hours)

<p><b>No more than three hours of credit below C- is allowed in major courses.</b></p> <p><b>REQUIREMENT 1</b> Complete 1 course STAT 121 - Principles of Statistics 3.0</p> <p><b>REQUIREMENT 2</b> Complete 2 courses</p> <p><b>PREPARATION CORE COURSES:</b> *MATH 112 - Calculus 1 4.0 MATH 113 - Calculus 2 4.0</p> <p><b>REQUIREMENT 3</b> Complete 8 courses</p> <p><b>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 - Probability and Inference 1 3.0 STAT 330 - Introduction to Regression 3.0 STAT 340 - Probability and Inference 2 3.0</p> <p><b>REQUIREMENT 4</b> Complete 9.0 hours from the following course(s) STAT 125 - Introduction to Operating Systems, UNIX, and Shell Programn 1.5 STAT 126 - Introduction to Python 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 274 - Theory of Interest 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 435 - Nonparametric Statistical Methods 3.0 STAT 437 - Applications in Biostatistics 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 for Actuarial Modeling and Data Analy 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</p>	<p>STAT 531 - Experimental Design 3.0 STAT 538 - Survival Analysis 3.0</p> <p><b>REQUIREMENT 5</b> Complete 9.0 hours from the following course(s) <b>NOTE: COURSES USED ABOVE WILL NOT DOUBLE COUNT HERE.</b> C S 142 - Introduction to Computer Programming 3.0 IS 515 - Spreadsheets for Business Analysis 3.0 IS 520 - Business Programming and Spreadsheet Automation 3.0 MATH 313 - Elementary Linear Algebra 3.0 MATH 314 - Calculus of Several Variables 3.0 STAT 125 - Introduction to Operating Systems, UNIX, and Shell Programn 1.5 STAT 126 - Introduction to Python 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 274 - Theory of Interest 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 435 - Nonparametric Statistical Methods 3.0 STAT 437 - Applications in Biostatistics 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 for Actuarial Modeling and Data Analy 3.0 STAT 495R - Special Topics in Statistics 3.0v <i>You may take up to 3 credit hours.</i> STAT 496R - Academic Internship: Statistics 9.0v <i>You may take up to 3 credit hours.</i> STAT 497R - Introduction to Statistical Research 3.0v <i>You may take up to 3 credit hours.</i> STAT 531 - Experimental Design 3.0 STAT 538 - Survival Analysis 3.0</p>	<p><b>THE DISCIPLINE:</b></p> <p>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.</p> <p>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.</p> <p><b>CAREER OPPORTUNITIES:</b></p> <p>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.</p> <p><b>CERTIFICATION:</b></p> <p><b>ASQ Certified Quality Process Analyst (CQPA).</b> Students interested in employment as quality analysts should take Stat 462 to prepare for certification by the ASQ as described in <a href="http://asq.org/higher-education/why-quality/cqpacertification-competitive-edge.html">asq.org/higher-education/why-quality/cqpacertification-competitive-edge.html</a>. Highly motivated students may also prepare on their own with the materials and practice exams through <a href="http://ce.byu.edu/cw/prodev/">ce.byu.edu/cw/prodev/</a>.</p> <p><b>SAS Certified Base Programmer and SAS Certified Advanced Programmer.</b> Students can take the SAS Certification exams after completing Stat 124 and 224. Information and exam registration is available</p>
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2018-2019

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 <https://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 (<https://jpsm.umd.edu/undergraduate/junior-fellows-overview>), National Institute of Standards and Technology (<https://www.nist.gov/programs-projects/internship-program>), National Institutes of Health—Summer Institute for Training in Biostatistics (<https://www.nhlbi.nih.gov/node-general/summer-institute-biostatistics>). Local internships are also available at Qualtrics, Utah Transit Authority, Intermountain Healthcare, Adobe Predictive Analytics, and inc.com.

### 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.

### DEPARTMENT INFORMATION

#### Department of Statistics

Brigham Young University  
223 TMCB  
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Telephone: (801) 422-4505

#### FACULTY ADVISOR:

Del T. Scott

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### ADVISEMENT CENTER INFORMATION

FOR UNIVERSITY CORE OR PROGRAM QUESTIONS, CONTACT THE ADVISEMENT CENTER.

#### Physical and Mathematical Sciences College Advisement Center

Brigham Young University  
N-181 ESC  
Provo, UT 84602  
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