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

Physical and Mathematical Sciences, Statistics

For students entering the degree program during the 2022-2023 curricular year.

University Core and Graduation Requirements

University Core Requirements:

Requirements	#Classes	Hours	Classes
Religion Cornerstones			
Teachings and Doctrine of The Book of Mormon	1	2.0	from approved list
Jesus Christ and the Everlasting Gospel	1	2.0	from approved list
Foundations of the Restoration	1	2.0	REL C 225
The Eternal Family	1	2.0	from approved list
The Individual and Society			
American Heritage	1-2	3-6.0	from approved list
Global and Cultural Awareness	1	3.0	from approved list
Skills			
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*
Arts, Letters, and Sciences			
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
Core Enrichment: Electives			
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)

Graduation Requirements:

Minimum residence hours required	30.0
Minimum hours needed to graduate	120.0

Suggested Sequence of Courses

FRESHMAN YEAR

1st Semester

1st Year Writing	3.0
Social Science	3.0
MATH 112 (FWSpSu)	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 (FWSpSu)	4.0
STAT 230	3.0
Physical Science	3.0
Religion Cornerstone course	2.0
Total Hours	**15.0**

SOPHOMORE YEAR

3rd Semester

MATH 213	2.0
MATH 215	1.0
STAT 250	3.0
Civilization 1	3.0
Global and Cultural Awareness	3.0
Religion Cornerstone course	2.0
Total Hours	**14.0**

4th Semester

STAT 240	3.0
STAT 330	3.0
Civilization 2	3.0
Religion Cornerstone course	2.0
Open Electives	4.0
Total Hours	**15.0**

JUNIOR YEAR

5th Semester

Requirement 4 Elective	3.0
STAT 340	3.0
Advanced Written and Oral Communication	3.0
Biological Science	3.0
Religion elective	2.0
Open Electives	2.0
Total Hours	**16.0**

6th Semester

Requirement 5 Elective #1	
Requirement 6 Elective #1	3.0
Letters	3.0
Religion Elective	3.0
Open Electives	2.0
Total Hours	4.0
	15.0

SENIOR YEAR

7th Semester

Requirement 5 Elective #2	
Requirement 6 Elective #2	3.0
Arts	3.0
Religion Elective	3.0
Open Electives	2.0
Total Hours	4.0
	15.0

8th Semester

Requirement 6 Elective #3	
Requirement 6 Elective #4	3.0
Requirement 6 Elective #5	3.0
Open Electives	3.0
Total Hours	6.0
	15.0

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 reach the 120 credit minimum needed to graduate. Taking fewer credits substantially increases the number of semesters to graduate.

Note 4: Students must have the statistics core completed before their senior year in order to graduate within four years.

Note 5: 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.

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2022-2023 Program Requirements (53.5 Credit Hours)

REQUIREMENT 1 Complete 2 courses

STAT 121 - Principles of Statistics	3.0
STAT 130 - Introduction to the Department of Statistics	0.5

REQUIREMENT 2 Complete 5 courses

STATISTICS CORE COURSES:

STAT 230 - Statistical Modeling 1	3.0
STAT 240 - Probability and Inference	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 4 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 3.0 hours from the following course(s)

C S 110 - How to Program	3.0
C S 111 - Introduction to Computer Science	3.0
HLTH 440 - Introduction to Statistical Computing in Epidemiology (SAS)	3.0
IS 520 - Business Programming and Spreadsheet Automation	3.0
STAT 286 - Data Science Ecosystems	3.0

REQUIREMENT 5 Complete 6.0 hours from the following course(s)

STAT 435 - Nonparametric Statistical Methods	3.0
STAT 437 - Applications in Biostatistics	3.0
STAT 451 - Applied Bayesian Statistics	3.0
STAT 466 - Introduction to Reliability	3.0
STAT 469 - Analysis of Correlated Data	3.0
STAT 482 - Data Science Capstone 1	3.0
STAT 483 - Data Science Capstone 2	3.0
STAT 486 - Machine Learning	3.0
STAT 495R - Special Topics in Statistics	3.0v
STAT 531 - Experimental Design	3.0
STAT 538 - Survival Analysis	3.0

REQUIREMENT 6 Complete 15.0 hours from the following course(s)

NOTE: COURSES USED IN REQUIREMENTS 4 AND 5 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.

C S 110 - How to Program	3.0
C S 111 - Introduction to Computer Science	3.0
IS 515 - Adv Spreadsheets Bus Analysis	
IS 520 - Business Programming and Spreadsheet Automation	3.0
MATH 314 - Calculus of Several Variables	3.0
STAT 234 - Methods of Survey Sampling	3.0
STAT 251 - Introduction to Bayesian Statistics	3.0
STAT 274 - Theory of Interest	3.0
STAT 286 - Data Science Ecosystems	3.0
STAT 344 - Foundations of Long-term Actuarial Mathematics	3.0
STAT 346 - Foundations of Short-term Actuarial Mathematics	3.0
STAT 381 - Statistical Computing	3.0
STAT 386 - Data Science Process	3.0
STAT 395R - Special Topics in Applied Statistics	3.0v
You may take up to 3 credit hours.	
STAT 435 - Nonparametric Statistical Methods	3.0
STAT 437 - Applications in Biostatistics	3.0
STAT 451 - Applied Bayesian Statistics	3.0
STAT 466 - Introduction to Reliability	3.0
STAT 469 - Analysis of Correlated Data	3.0
STAT 482 - Data Science Capstone 1	3.0
STAT 483 - Data Science Capstone 2	3.0
STAT 486 - Machine Learning	3.0
STAT 495R - Special Topics in Statistics	3.0v
You may take up to 3 credit hours.	
STAT 496R - Academic Internship: Statistics	9.0v
You may take up to 3 credit hours.	
STAT 497R - Introduction to Statistical Research	3.0v
You may take up to 3 credit hours.	
STAT 531 - Experimental Design	3.0
STAT 538 - Survival Analysis	3.0

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.

CERTIFICATION:

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/cqpacertification-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, 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.

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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

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ADVISEMENT CENTER INFORMATION

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