BS in Statistics: Data Science (695236) MAP Sheet

Physical and Mathematical Sciences, Statistics

For students entering the degree program during the 2021-2022 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	3.0	from approved list
Physical Science	1	3.0	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

Graduation Requirements:

Minimum residence hours required	30.0
Minimum hours needed to graduate	120.0

Suggested Sequence of Courses

FRESHMAN YEAR

1st Semester

First-year Writing	3.0
MATH 112	4.0
STAT 121	3.0
STAT 130	0.5
Arts	3.0
Religion Cornerstone course	2.0
Total Hours	**15.5**

2nd Semester

American Heritage	3.0
MATH 113	4.0
STAT 230	3.0
Physical Science	3.0
Religion Cornerstone course	2.0
Total Hours	**15.0**

SOPHOMORE YEAR

3rd Semester

C S 142	3.0
MATH 213	2.0
MATH 215	1.0
STAT 250	3.0
Global and Cultural Awareness	3.0
Religion Cornerstone course	2.0
Total Hours	**14.0**

4th Semester

C S 235	3.0
STAT 240	3.0
STAT 330	3.0
Letters	3.0
Religion Cornerstone course	2.0
Total Hours	**14.0**

JUNIOR YEAR

5th Semester

STAT 125	1.5
STAT 126	1.5
STAT 340	3.0
Global and Cultural Awareness	3.0
Civilization 1	3.0
Religion Elective	2.0
Open Electives	2.0
Total Hours	**16.0**

6th Semester

STAT 226	1.5
Requirement 7 Elective #1	3.0
Requirement 7 Elective #2	3.0
Adv. Written and Oral Communication	3.0
Civilization 2	3.0
Religion elective	2.0
Total Hours	**15.5**

SENIOR YEAR

7th Semester

STAT 420 or STAT 426	3.0
Requirement 8 Elective	3.0
Social Science	3.0
Religion Elective	2.0
Open Electives	4.0
Total Hours	**15.0**

8th Semester

STAT 421 or Requirement 5.2	3.0
Open Electives	12.0
Total Hours	**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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2021-2022 Program Requirements (55 Credit Hours)

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

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 - Analysis of Variance	3.0
STAT 240 - Probability and Inference 1	3.0
STAT 250 - Applied R Programming	3.0
STAT 330 - Introduction to Regression	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 courses

STAT 125 - Introduction to Operating Systems, Linux/Unix, and Shell Prog	1.5
STAT 126 - Introduction to Python Programming	1.5
STAT 226 - SQL	1.5

REQUIREMENT 5 Complete 1 option

OPTION 5.1 Complete 2 courses

STAT 420 - Big Data Science 1	3.0
STAT 421 - Big Data Science 2	3.0

OPTION 5.2 Complete 2 groups

GROUP 5.2.1 Complete 1 course

STAT 426 - Data Science Methods and Applications in Statistics	3.0

GROUP 5.2.2 Complete 1 course

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 - Analysis of Correlated Data	3.0

REQUIREMENT 6 Complete 2 courses

C S 142 - Introduction to Computer Programming	3.0
C S 235 - Data Structures and Algorithms	3.0

REQUIREMENT 7 Complete 6.0 hours from the following course(s)

COURSES TAKEN IN ANY OF THE REQUIREMENTS ABOVE WILL NOT DOUBLE COUNT HERE.

STAT 124 - SAS Base Programming Skills	1.5
STAT 224 - Applied SAS Programming	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 426 - Data Science Methods and Applications in Statistics	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 - Analysis of Correlated Data	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
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

REQUIREMENT 8 Complete 3.0 hours from the following course(s)

COURSES TAKEN IN ANY OF THE REQUIREMENTS ABOVE WILL NOT DOUBLE COUNT HERE.

IS 515 - Spreadsheets for Business Analysis	3.0
IS 520 - Business Programming and Spreadsheet Automation	3.0
MATH 314 - Calculus of Several Variables	3.0
MATH 341 - Theory of Analysis 1	3.0
MATH 342 - Theory of Analysis 2	3.0
STAT 124 - SAS Base Programming Skills	1.5
STAT 224 - Applied SAS Programming	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 426 - Data Science Methods and Applications in Statistics	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 - Analysis of Correlated Data	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
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, environmental, 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.

The Data Science emphasis is designed to help students develop skills that are needed to work on a data science team. These skills include programming, facility with data structures and algorithms, statistical methods, and experience working with real world big data problems. Students with a Data Science emphasis leave BYU with a multi-faceted, disciplined, and flexible approach to data, a rich vocabulary for working with others in data-focused disciplines, and a well-developed capacity for understanding and communicating statistical results.

CAREER OPPORTUNITIES:

BS in Statistics: Data Science (695236)

2021-2022

The increase of data science and analytics across disciplines is creating new opportunities for statisticians. The Data Science emphasis prepares students to get entry-level jobs on data science teams in the private and public sectors. A feature of this emphasis is the development of skills and vocabulary in computer science and programming needed to work with massive datasets and to communicate with others on data-science teams.

CERTIFICATION:

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.

INTERNSHIPS:

Several government agencies offer internship programs suitable for students in the Data Science 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

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

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