BS in STATISTICS: Biostatistics Emphasis (695233) 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	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	2	5.0	MMBio 240* & PDBio 120*
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

GRADUATION REQUIREMENTS:

Minimum residence hours required	30.0
Minimum hours needed to graduate	120.0

PROGRAM REQUIREMENTS (60-61 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:

Math	313	Elementary Linear Algebra	3.0
Math	314	Calculus of Several Variables	3.0

Complete one course from the following:

Chem	105	General College Chemistry	4.0
Chem	111	Principles of Chemistry	3.0

Complete the following:

MMBio	240*	Molecular Biology	3.0
PDBio	120*	Science of Biology	2.0

Complete one course from the following:

Bio	350	Ecology	3.0
PDBio	305	Human Physiology (with lab)	4.0
PWS	340	Genetics	3.0

Complete 12 credit hours from the following two lists, with a minimum of 6 hours from list A:

A. Complete at least 6 hours from the following:

Stat	151	Introduction to Bayesian Statistics	3.0
Stat	234	Methods of Survey Sampling	3.0

(Continued in next column)

(Continued from previous column)

Stat	274	Theory of Interest	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	466	Introduction to Reliability	3.0
Stat	469	Applied Time Series & Forecasting	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. Complete 6 hours from the following:

C S	142	Introduction to Computer Programming	3.0
Hlth	345	Principles of Epidemiology	3.0
IS	515	Spreadsheets for Business Analysis	3.0
IS	520	Bus Progrmmng & Sprdsht Automtn	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	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	466	Introduction to Reliability	3.0
Stat	469	Applied Time Series and Forecasting	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

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.

Recommended Courses:

It is **strongly recommended** that students interested in graduate study in biostatistics include Math 341 and 342 in their elective lists.

***THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (9 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: Biostatistics Emphasis (695233)
2015–2016

Suggested Sequence of Courses:

FRESHMAN YEAR

1st Semester	
1st Year Writing or American Heritage	3.0
Math 112* (FWSpSu)	4.0
PDBio 120	2.0
Stat 121	3.0
Religion Cornerstone course	2.0
General electives	1.0
Total Hours	**15.0**

2nd Semester	
American Heritage or 1st Year Writing	3.0
Math 113 (FWSpSu)	4.0
Stat 230	3.0
Religion Cornerstone course	2.0
Phy S 100	3.0
Total Hours	**15.0**

SOPHOMORE YEAR

3rd Semester	
Math 313 (FWSpSu)	3.0
Stat 240	3.0
Global and Cultural Awareness	3.0
Civilization 1	3.0
Religion Cornerstone course	2.0
General electives	1.0
Total Hours	**15.0**

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
Religion Cornerstone course	2.0
Civilization 2	3.0
Total Hours	**15.0**

Department recommendation: Internship during Spring/Summer

JUNIOR YEAR

5th Semester	
Chem 105	4.0
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
Total Hours	**15.0**

6th Semester	
Statistics elective	3.0
MMBio 240	3.0
Letters	3.0
Religion lective	2.0
General electives	3.0
Total Hours	**14.0**

Department recommendation: Internship during Spring/Summer

SENIOR YEAR

7th Semester	
Statistics elective	3.0
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Bio 350 or PDBio 305 or PWS 340	2-4.0
Arts	3.0
Religion elective	2.0
General electives	0-2.0
Total Hours	**15.0**

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

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.

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.

The Biostatistics emphasis prepares students to engage in work to advance public health, biology, and medicine. It prepares students for graduate programs in statistics, biostatistics, epidemiology, public health, bioinformatics, and for health sciences professional programs. The Biostatistics emphasis includes the mathematics courses required for graduate study in statistics and biostatistics together with a selection of biology and chemistry courses.

CAREER OPPORTUNITIES:

The increase of big data and analytics in personalized medicine, genomics, and bioinformatics is creating new challenges and opportunities for biostatisticians. Students with undergraduate degrees in biostatistics are well-prepared to apply for graduate programs in statistics and biostatistics but they also stand out as applicants to medical and dental schools and residencies. Statistical training prepares these students to take part in basic and clinical research during medical or dental school and residency.

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 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/sas-certificate-opportunities.

Internships. The National Institutes of Health support a Summer Institute for Training in Biostatistics at nine university biostatistics programs. Program/application information is found at www.nhlbi.nih.gov/funding/training/redbook/sibsweb.htm.

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