# BS in Statistics: Biostatistics (695233) MAP Sheet

Physical and Mathematical Sciences, Statistics

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

<table>
<thead>
<tr>
<th>University Core and Graduation Requirements</th>
<th>Suggested Sequence of Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>University Core Requirements:</strong></td>
<td></td>
</tr>
<tr>
<td>Requirements</td>
<td></td>
</tr>
<tr>
<td><strong>#Classes</strong></td>
<td><strong>Hours</strong></td>
</tr>
<tr>
<td>Religion Cornerstones</td>
<td></td>
</tr>
<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
<td>1</td>
</tr>
<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td>1</td>
</tr>
<tr>
<td>Foundations of the Restoration</td>
<td>1</td>
</tr>
<tr>
<td>The Eternal Family</td>
<td>1</td>
</tr>
<tr>
<td><strong>The Individual and Society</strong></td>
<td></td>
</tr>
<tr>
<td>American Heritage</td>
<td>1-2</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>1</td>
</tr>
<tr>
<td><strong>Skills</strong></td>
<td></td>
</tr>
<tr>
<td>First Year Writing</td>
<td>1</td>
</tr>
<tr>
<td>Advanced Written and Oral Communications</td>
<td>1</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>1</td>
</tr>
<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Arts, Letters, and Sciences</strong></td>
<td></td>
</tr>
<tr>
<td>Civilization 1</td>
<td>1</td>
</tr>
<tr>
<td>Civilization 2</td>
<td>1</td>
</tr>
<tr>
<td>Arts</td>
<td>1</td>
</tr>
<tr>
<td>Letters</td>
<td>1</td>
</tr>
<tr>
<td>Biological Science</td>
<td>1</td>
</tr>
<tr>
<td>Physical Science</td>
<td>1-2</td>
</tr>
<tr>
<td>Social Science</td>
<td>1</td>
</tr>
<tr>
<td><strong>Core Enrichment: Electives</strong></td>
<td></td>
</tr>
<tr>
<td>Religion Electives</td>
<td>3-4</td>
</tr>
<tr>
<td>Open Electives</td>
<td>Variable</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td>16.0</td>
</tr>
<tr>
<td><strong>Requirement 5 elective</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td></td>
</tr>
</tbody>
</table>

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.
### BS in Statistics: Biostatistics (695233)
#### 2018-2019 Program Requirements (50 Credit Hours)

No more than 3 hours of credit below C- is allowed in major courses.

<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>Course(s)</th>
<th>Credits</th>
</tr>
</thead>
</table>
| **REQUIREMENT 1** | Complete 1 course  
STAT 121 - Principles of Statistics                          | 3.0     |
| **REQUIREMENT 2** | Complete 2 courses  
PREPARATION CORE COURSES:  
* MATH 112 - Calculus 1  
MATH 113 - Calculus 2                                         | 4.0     |
| **REQUIREMENT 3** | Complete 8 courses  
STATISTICS CORE COURSES:  
STAT 123 - Introduction to Programming  
STAT 124 - SAS Base Programming Skills  
STAT 224 - Applied SAS Programming  
STAT 230 - Analysis of Variance  
STAT 240 - Probability and Inferenc  
STAT 330 - Introduction to Regression  
STAT 340 - Probability and Inferenc  
MATH 313 - Elementary Linear Algebra  
MATH 314 - Calculus of Several Variables                          | 3.0     |
| **REQUIREMENT 4** | Complete 2 courses  
STAT 437 - Applications in Biostatistics  
STAT 538 - Survival Analysis                                        | 3.0     |
| **REQUIREMENT 5** | Complete 3.0 hours from the following course(s)  
STAT 437 - Applications in Biostatistics  
STAT 538 - Survival Analysis                                        | 3.0     |
| **REQUIREMENT 6** | Complete 6.0 hours from the following course(s)  
BIO 350 - Ecology  
CHEM 105 - General College Chemistry 1 with Lab (Integrated)  
CHEM 111 - Principles of Chemistry 1  
HLTH 345 - Principles of Epidemiology  
MIMBIO 240 - Molecular Biology  
PDBIO 120 - Science of Biology  
PDBIO 305 - Human Physiology  
PWS 340 - Genetics  
STAT 437 - Applications in Biostatistics  
STAT 538 - Survival Analysis                                       | 3.0     |
| **REQUIREMENT 7** | Complete 3.0 hours from the following course(s)  
NOTE: COURSES USED ABOVE WILL NOT DOUBLE COUNT HERE. NOTE: NO MORE THAN 3.0 CREDIT HOURS OF STAT 496R MAY BE COUNTED TOWARD THIS REQUIREMENT.  
STAT 125 - Introduction to Operating Systems, UNIX, and Shell Programming  
STAT 126 - Introduction to Python Programming  
STAT 226 - SQL  
STAT 234 - Methods of Survey Sampling  
STAT 251 - Introduction to Bayesian Statistics  
STAT 381 - Statistical Computing  
STAT 420 - Big Data Science 1  
STAT 421 - Big Data Science 2  
STAT 422 - Big Data Science 3  
STAT 423 - Methods of Survey Sampling  
STAT 431 - Introduction to Reliability  
STAT 432 - Special Topics in Statistics  
STAT 435 - Nonparametric Statistical Methods  
STAT 437 - Applications in Biostatistics  
STAT 441 - Applied Bayesian Statistics  
STAT 446 - Introduction to Reliability  
STAT 449 - Applied Time Series and Forecasting  
STAT 459R - Special Topics in Statistics  
STAT 496R - Academic Internship: Statistics  
STAT 497R - Introduction to Statistical Research  
STAT 513 - Experimental Design  
STAT 538 - Survival Analysis  
MATH 313 - Elementary Linear Algebra  
MATH 314 - Calculus of Several Variables  
MATH 320 - Applied SAS Programming  
MATH 324 - Applied R Programming  
HLTH 345 - Principles of Epidemiology  
CHEM 105 - General College Chemistry 1 with Lab (Integrated)  
PDBIO 120 - Science of Biology  
PDBIO 305 - Human Physiology  
PWS 340 - Genetics  
STAT 437 - Applications in Biostatistics  
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.

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.

**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 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:**

**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 https://www.nhlbi.nih.gov/node-general/summer-institute-biostatistics.

**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
Provo, UT 84602
Telephone: (801) 422-4505

**FACULTY ADVISOR:**
Del T. Scott
223C TMCB
Brigham Young University, Provo, UT 84602
Telephone: (801) 422-7054

**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
Telephone: (801) 422-2674