BS in Statistics: Biostatistics (695233) MAP Sheet
Physical and Mathematical Sciences, Statistics
For students entering the degree program during the 2017-2018 curricular year.

### University Core and Graduation Requirements

<table>
<thead>
<tr>
<th>Requirements</th>
<th>#Classes</th>
<th>Hours</th>
<th>Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>University Core Requirements:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religion Cornerstones</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
<td>1</td>
<td>2.0</td>
<td>REL A 275</td>
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<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td>1</td>
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<td>REL A 250</td>
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<tr>
<td>Foundations of the Restoration</td>
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<td>REL C 225</td>
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<tr>
<td>The Eternal Family</td>
<td>1</td>
<td>2.0</td>
<td>REL C 200</td>
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<tr>
<td><strong>The Individual and Society</strong></td>
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<tr>
<td>American Heritage</td>
<td>1-2</td>
<td>3-6.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td><strong>Skills</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>First Year Writing</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Advanced Written and Oral Communications</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>1</td>
<td>4.0</td>
<td>MATH 112*</td>
</tr>
<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
<td>4.0</td>
<td>MATH 112*</td>
</tr>
<tr>
<td><strong>Arts, Letters, and Sciences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civilization 1</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Civilization 2</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Arts</td>
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<td>from approved list</td>
</tr>
<tr>
<td>Letters</td>
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<td>from approved list</td>
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<tr>
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<td>PDBIO 120*</td>
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<tr>
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<tr>
<td>Social Science</td>
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<td>3.0</td>
<td>from approved list</td>
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<tr>
<td><strong>Core Enrichment: Electives</strong></td>
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<td>Religion Electives</td>
<td>3-4</td>
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<td>from approved list</td>
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<tr>
<td>Open Electives</td>
<td>Variable</td>
<td>Variable</td>
<td>personal choice</td>
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*

<table>
<thead>
<tr>
<th>Requirement</th>
<th>#Classes</th>
<th>Hours</th>
<th>Classes</th>
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<tbody>
<tr>
<td><strong>Core Enrichment: Electives</strong></td>
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<tr>
<td>Religion Electives</td>
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</tr>
<tr>
<td>Open Electives</td>
<td>Variable</td>
<td>Variable</td>
<td>personal choice</td>
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</table>

**Note:** THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (9 hours overlap)

### Graduation Requirements:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Hours</th>
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<tr>
<td>Minimum residence hours required</td>
<td>30.0</td>
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<tr>
<td>Minimum hours needed to graduate</td>
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### Suggested Sequence of Courses

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<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Hours</th>
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<tbody>
<tr>
<td><strong>FRESHMAN YEAR</strong></td>
<td></td>
<td></td>
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<tr>
<td>1st Semester</td>
<td></td>
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</tr>
<tr>
<td>First Year Writing</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>MATH 112* (FWSpSu)</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>STAT 121</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Biological Science</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>General electives</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Total Hours</td>
<td>16.0</td>
<td></td>
</tr>
<tr>
<td>2nd Semester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Heritage</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>MATH 113 (FWSpSu)</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>STAT 230</td>
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</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Physical Science</td>
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<tr>
<td>Total Hours</td>
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<tr>
<td><strong>SOPHOMORE YEAR</strong></td>
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<tr>
<td>3rd Semester</td>
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<tr>
<td>MATH 313 (FWSpSu)</td>
<td>3.0</td>
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<tr>
<td>STAT 240</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Civilization 1</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>General electives</td>
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<tr>
<td>Total Hours</td>
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<td></td>
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<tr>
<td>4th Semester</td>
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<td></td>
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<tr>
<td>MATH 314 (FWSpSu)</td>
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</tr>
<tr>
<td>STAT 123 or STAT 124</td>
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<tr>
<td>STAT 223 or STAT 224</td>
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<tr>
<td>STAT 310</td>
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<td>Civilization 2</td>
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<tr>
<td><strong>JUNIOR YEAR</strong></td>
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<td>5th Semester</td>
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<tr>
<td>Requirement 5 elective</td>
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</tr>
<tr>
<td>STAT 123 or STAT 124</td>
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<td></td>
</tr>
<tr>
<td>STAT 223 or STAT 224</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>STAT 340</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Advanced Written and Oral Communication</td>
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<tr>
<td>Religion elective</td>
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<tr>
<td>Total Hours</td>
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<tr>
<td>6th Semester</td>
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<tr>
<td>American Heritage</td>
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</tr>
<tr>
<td>MATH 314 (FWSpSu)</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>STAT 230</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Religion elective</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>General electives</td>
<td>4.0</td>
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<tr>
<td>Total Hours</td>
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<tr>
<td>7th Semester</td>
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<tr>
<td>Department recommendation: Internship during Spring/Summer</td>
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<tr>
<td><strong>SENIOR YEAR</strong></td>
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<tr>
<td>7th Semester</td>
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<tr>
<td>Statistics elective from requirement 5</td>
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<tr>
<td>Statistics elective from requirement 6</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Arts</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Religion elective</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>General electives</td>
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<tr>
<td>Total Hours</td>
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<tr>
<td>8th Semester</td>
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<tr>
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<tr>
<td>Statistics elective from requirement 6</td>
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</tr>
<tr>
<td>Arts</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Religion elective</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>General electives</td>
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<td></td>
</tr>
<tr>
<td>Total Hours</td>
<td>15.0</td>
<td></td>
</tr>
<tr>
<td>9th Semester</td>
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<tr>
<td>Statistics elective from requirement 5</td>
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<tr>
<td>Statistics elective from requirement 6</td>
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<tr>
<td>Arts</td>
<td>3.0</td>
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<tr>
<td>Religion elective</td>
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<td>General electives</td>
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</tr>
<tr>
<td>Total Hours</td>
<td>15.0</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.
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.
3. Students must have the statistics core completed before their senior year in order to graduate within four years.
<table>
<thead>
<tr>
<th>REQUIREMENT 1</th>
<th>Complete 1 course</th>
</tr>
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<tbody>
<tr>
<td>STAT 121 - Principles of Statistics</td>
<td>3.0</td>
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<table>
<thead>
<tr>
<th>REQUIREMENT 2</th>
<th>Complete 2 courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREPARATION CORE COURSES:</td>
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</tr>
<tr>
<td>*MATH 112 - Calculus 1</td>
<td>4.0</td>
</tr>
<tr>
<td>MATH 113 - Calculus 2</td>
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<table>
<thead>
<tr>
<th>REQUIREMENT 3</th>
<th>Complete 8 courses</th>
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<tbody>
<tr>
<td>STATISTICS CORE COURSES:</td>
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</tr>
<tr>
<td>STAT 123 - Introduction to R Programming</td>
<td>1.5</td>
</tr>
<tr>
<td>STAT 124 - SAS Base Programming Skills</td>
<td>1.5</td>
</tr>
<tr>
<td>STAT 223 - Applied R Programming</td>
<td>1.5</td>
</tr>
<tr>
<td>STAT 224 - Applied SAS Programming</td>
<td>1.5</td>
</tr>
<tr>
<td>STAT 230 - Analysis of Variance</td>
<td>3.0</td>
</tr>
<tr>
<td>STAT 240 - Discrete Probability</td>
<td>3.0</td>
</tr>
<tr>
<td>STAT 330 - Introduction to Regression</td>
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</tr>
<tr>
<td>STAT 340 - Inference</td>
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</table>

<table>
<thead>
<tr>
<th>REQUIREMENT 4</th>
<th>Complete 2 courses</th>
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<tbody>
<tr>
<td>MATH 313 - Elementary Linear Algebra</td>
<td>3.0</td>
</tr>
<tr>
<td>MATH 314 - Calculus of Several Variables</td>
<td>3.0</td>
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<table>
<thead>
<tr>
<th>REQUIREMENT 5</th>
<th>Complete 9.0 hours from the following course(s)</th>
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<tbody>
<tr>
<td>BIO 350 - Principles of Epidemiology</td>
<td>3.0</td>
</tr>
<tr>
<td>CHEM 105 - General College Chemistry 1 with Lab (Integrated)</td>
<td>4.0</td>
</tr>
<tr>
<td>CHEM 111 - Principles of Chemistry 1</td>
<td>4.0</td>
</tr>
<tr>
<td>HLTH 345</td>
<td>3.0</td>
</tr>
<tr>
<td>MMIBIO 240 - Molecular Biology</td>
<td>3.0</td>
</tr>
<tr>
<td>PDBIO 120 - Science of Biology</td>
<td>3.0</td>
</tr>
<tr>
<td>PDBIO 305 - Human Physiology</td>
<td>4.0</td>
</tr>
<tr>
<td>PWS 340 - Genetics</td>
<td>3.0</td>
</tr>
<tr>
<td>STAT 437 - Applications in Biostatistics</td>
<td>3.0</td>
</tr>
<tr>
<td>STAT 538 - Survival Analysis</td>
<td>3.0</td>
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</tbody>
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<table>
<thead>
<tr>
<th>REQUIREMENT 6</th>
<th>Complete 6.0 hours from the following course(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTE: COURSES USED FOR REQUIREMENT 5 WILL NOT DOUBLE COUNT FOR REQUIREMENT 6, NOTE: NO MORE THAN 3 CREDIT HOURS OF STAT 496R MAY BE COUNTED TOWARD THIS REQUIREMENT. NOTE: IT IS STRONGLY RECOMMENDED THAT STUDENTS INTERESTED IN GRADUATE STUDY IN BIOSTATISTICS INCLUDE MATH 341 AND 342 IN THEIR ELECTIVE LISTS.</td>
<td></td>
</tr>
<tr>
<td>CS 142 - Introduction to Computer Programming</td>
<td>3.0</td>
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</tbody>
</table>

| HLTH 345 - Principles of Epidemiology | 3.0 |
| IS 515 - Spreadsheets for Business Analysis | 3.0 |
| IS 520 - Business Programming and Spreadsheet Automation | 3.0 |
| MATH 341 - Theory of Analysis 1 | 3.0 |
| MATH 342 - Theory of Analysis 2 | 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 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 466 - Introduction to Reliability | 3.0 |
| STAT 469 - Applied Time Series and Forecasting | 3.0 |
| STAT 495R - Special Topics in Statistics | 3.0 |
| You may take up to 3 credit hours. | |
| STAT 496R - Academic Internship: Statistics | 9.0 |
| You may take up to 3 credit hours. | |
| STAT 497R - Introduction to Statistical Research | 3.0 |
| 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.

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/sascertificate-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.

**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
BS in Statistics: Biostatistics (695233)
2017-2018

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