BS in STATISTICS: Biostatistics Emphasis (695233) MAP Sheet
Department of Statistics
For students entering the degree program during the 2015–2016 curricular year.

<table>
<thead>
<tr>
<th>UNIVERSITY CORE REQUIREMENTS</th>
<th>PROGRAM REQUIREMENTS (60-61 total hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UNIVERSITY CORE REQUIREMENTS</strong></td>
<td><strong>Complete the following preparation core courses:</strong></td>
</tr>
<tr>
<td>Requirements</td>
<td>#Classes</td>
</tr>
<tr>
<td><strong>Religion Cornerstones</strong></td>
<td>1</td>
</tr>
<tr>
<td>Teachings and Doctrine, Book of Mormon</td>
<td>1</td>
</tr>
<tr>
<td>Jesus Christ &amp; 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>The Individual and Society</td>
<td>1–2</td>
</tr>
<tr>
<td>Citizenship</td>
<td>1</td>
</tr>
<tr>
<td><strong>Skills</strong></td>
<td><strong>Complete the following statistics core courses:</strong></td>
</tr>
<tr>
<td>Effective Communication</td>
<td>1</td>
</tr>
<tr>
<td>First-Year Writing</td>
<td>1</td>
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<tr>
<td>Adv Written &amp; Oral Communication</td>
<td>1</td>
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<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><strong>Complete the following:</strong></td>
</tr>
<tr>
<td>Civilization 1 and 2</td>
<td>2</td>
</tr>
<tr>
<td>Arts</td>
<td>1</td>
</tr>
<tr>
<td>Letters</td>
<td>1</td>
</tr>
<tr>
<td>Scientific Principles &amp; Reasoning</td>
<td>2</td>
</tr>
<tr>
<td>Biological Science</td>
<td>2</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><strong>Complete one course from the following:</strong></td>
</tr>
<tr>
<td>Religion Electives</td>
<td>3–4</td>
</tr>
<tr>
<td>Open Electives</td>
<td>Variable</td>
</tr>
</tbody>
</table>

**GRADUATION REQUIREMENTS:**

- Minimum residence hours required: 30.0
- Minimum hours needed to graduate: 120.0

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

- Stat 123 Introduction to R Programming
- Stat 124 SAS Base Programming Skills
- Stat 223 Applied R Programming
- Stat 224 Applied SAS Programming
- Stat 230 Analysis of Variance
- Stat 240 Discrete Probability
- Stat 290 Communication of Statistical Results
- Stat 330 Introduction to Regression
- Stat 340 Inference

**Complete the following:**

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

**Complete one course from the following:**

- Chem 105 General College Chemistry
- Chem 111 Principles of Chemistry

**Complete the following:**

- MMBio 240* Molecular Biology
- PDBio 120* Science of Biology

**Complete one course from the following:**

- Bio 350 Ecology
- PDBio305 Human Physiology (with lab)
- PWS 340 Genetics

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

**List A:**

- Complete at least 6 hours from the following:
  - Stat 151 Introduction to Bayesian Statistics
  - Stat 234 Methods of Survey Sampling

**List B:**

- Stat 274 Theory of Interest
- Stat 377 Statistical Models for Financial Econ
- Stat 424 Statistical Computing
- Stat 431 Experimental Design
- Stat 435 Nonparametric Statistical Methods
- Stat 451 Applied Bayesian Statistics
- Stat 466 Introduction to Reliability
- Stat 469 Applied Time Series & Forecasting
- Stat 495R Special Topics in Statistics
- Stat 496R Academic Internship: Statistics
- Stat 497R Introduction to Statistical Research
- Stat 538 Survival Analysis

**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 340 3.0
- Advanced Written and Oral Communication 3.0
- Religion elective 2.0

Total Hours 15.0

**JUNIOR YEAR**

5th Semester
- Chem 105 4.0
- Stat 123 or Stat 124 1.5
- Stat 223 or Stat 224 1.5
- MMBio 240 3.0
- Letters 3.0
- Civilization 2 3.0

Total Hours 15.0

6th Semester
- Statistics elective 3.0
- MMBio 240 3.0
- Religion elective 2.0
- General electives 3.0

Total Hours 14.0

**SENIOR YEAR**

7th Semester
- 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

Department recommendation: Internship during Spring/Summer

**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, 320, 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.

**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.

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