### University Core and Graduation Requirements:

#### University Core Requirements:

<table>
<thead>
<tr>
<th>Requirements</th>
<th>#Classes</th>
<th>Hours</th>
<th>Classes</th>
</tr>
</thead>
<tbody>
<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>
</tr>
<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td>1</td>
<td>2.0</td>
<td>REL A 250</td>
</tr>
<tr>
<td>Foundations of the Restoration</td>
<td>1</td>
<td>2.0</td>
<td>REL C 225</td>
</tr>
<tr>
<td>The Eternal Family</td>
<td>1</td>
<td>2.0</td>
<td>REL C 200</td>
</tr>
<tr>
<td>The Individual and Society</td>
<td></td>
<td></td>
<td></td>
</tr>
<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>Skills</td>
<td></td>
<td></td>
<td></td>
</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>WRTG 316 recommended</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>1</td>
<td>3.0</td>
<td>STAT 121 *</td>
</tr>
<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
<td>3.0</td>
<td>STAT 121 *</td>
</tr>
<tr>
<td>Arts, Letters, and Sciences</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>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Letters</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Biological Science</td>
<td>1</td>
<td>3.0</td>
<td>MMBIO 240 *</td>
</tr>
<tr>
<td>Physical Science</td>
<td>2</td>
<td>7.0</td>
<td>CHEM 106, 107</td>
</tr>
<tr>
<td>Social Science</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
</tbody>
</table>

#### 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 (10 hours overlap)  
** PHSCS 105 RECOMMENDED

FOR UNIVERSITY CORE QUESTIONS CONTACT THE ADVISEMENT CENTER — FOR PROGRAM QUESTIONS SEE YOUR FACULTY ADVISOR

#### Graduation Requirements:

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

### Suggested Sequence of Courses

#### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>2nd Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion Cornerstone course</td>
<td>Religion Cornerstone course</td>
</tr>
<tr>
<td>First-year Writing or American Heritage</td>
<td>First-year Writing or American Heritage</td>
</tr>
<tr>
<td>Arts or Letters</td>
<td>Arts or Letters</td>
</tr>
<tr>
<td>CHEM 105</td>
<td>CHEM 106, 107</td>
</tr>
<tr>
<td>PDBIO 120 or MMBIO 121</td>
<td>PWS 188</td>
</tr>
</tbody>
</table>

**Total Hours: 15.0**

#### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>3rd Semester</th>
<th>4th Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion Cornerstone course</td>
<td>Religion Cornerstone course</td>
</tr>
<tr>
<td>Physical Science</td>
<td>Physical Science</td>
</tr>
<tr>
<td>BIO 165 or MMBIO 240</td>
<td>BIO 165 or MMBIO 240</td>
</tr>
<tr>
<td>CHEM 351 (GG) or ACC 200 (BB)</td>
<td>CHEM 352 (GG) or (PDBIO 444 and Lecture series (BB))</td>
</tr>
<tr>
<td>PWS 288 or STAT 121</td>
<td>PWS 472 (GG) or (PDBIO 444 and Lecture series (BB))</td>
</tr>
</tbody>
</table>

**Total Hours: 14.0**

#### JUNIOR YEAR

<table>
<thead>
<tr>
<th>5th Semester</th>
<th>6th Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion Cornerstone course</td>
<td>Religion Cornerstone course</td>
</tr>
<tr>
<td>Major elective (GG) or management (BB)</td>
<td>Major elective (GG) or management (BB)</td>
</tr>
<tr>
<td>CHEM 351 (GG) or ACC 200 (BB)</td>
<td>CHEM 352 (GG) or (PDBIO 444 and Lecture series (BB))</td>
</tr>
<tr>
<td>PWS 472 (GG) or (PDBIO 444 and Lecture series (BB))</td>
<td>PWS 488 (GG) or STRAT 488 (BB)</td>
</tr>
</tbody>
</table>

**Total Hours: 11.0-14.0**

#### SENIOR YEAR

<table>
<thead>
<tr>
<th>7th Semester</th>
<th>8th Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion elective</td>
<td>Religion elective</td>
</tr>
<tr>
<td>Social Science</td>
<td>Social Science</td>
</tr>
<tr>
<td>PDBIO 390 or PWS 468, 470</td>
<td>PDBIO 390 or PWS 468, 470</td>
</tr>
</tbody>
</table>

**Total Hours: 13.0-15.0**

**Note:** The above course of study provides a guide in planning. However, to meet special needs and interests of each student, the courses taken and the order in which they are taken may require alteration. Study the requirements, plan a course of study, and consult with an advisor early in the program. This will save considerable time and minimize frustration.

**Note:** 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:** Preparation for graduate, medical, or dental school should include PHSCS 105-108. Preparation for medical or dental school should include CHEM 351-353.
## BS in Genetics, Genomics & Biotechnology (285823)
### 2020-2021 Program Requirements (62 - 65 Credit Hours)

### REQUIREMENT 1 Complete 12 courses
#### CORE COURSES:
- BIO 165 - Introduction to Bioinformatics 3.0
- CHEM 105 - General College Chemistry 1 with Lab (Integrated) 4.0
- CHEM 106 - General College Chemistry 2 3.0
- CHEM 107 - General College Chemistry Laboratory 1.0
- *MMBIO 240 - Molecular Biology 3.0
- PDBIO 360 - Cell Biology 3.0
- PWS 188 - Introduction to Genetics, Genomics, and Biotechnology 1.0
- PWS 288 - Molecular Genetics Laboratory 3.0
- PWS 340 - Genetics 3.0
- PWS 468 - PWS-Bio-MMBio Genomics 3.0
- PWS 470 - Analysis of Genetic and Genomic Data 3.0
- *STAT 121 - Principles of Statistics 3.0

### REQUIREMENT 2 Complete 1 course
#### MMBIO 121 - General Biology: Health and Disease 3.0
#### PDBIO 120 - Science of Biology 3.0

### REQUIREMENT 3 Complete 1 option
#### OPTION 3.1 Complete 4 groups
A. GENETICS AND GENOMICS CORE TRACK:
- **GROUP 3.1.1** Complete 5 courses
  - **CORE GENETICS AND GENOMICS COURSES:**
    - CHEM 351 - Organic Chemistry 1 3.0
    - CHEM 352 - Organic Chemistry 2 3.0
    - CHEM 481 - Biochemistry 3.0
    - PWS 472 - Conservation Genomics 3.0
    - PWS 488 - Readings in Biotechnology 3.0
- **GROUP 3.1.2** Complete 1 course
  - BIO 200 - Evolutionary Medicine 2.0
  - BIO 420 - Evolutionary Biology 4.0
- **GROUP 3.1.3** Complete 1 course
  - **ORGANISMAL PHYSIOLOGY COURSE:**
    - BIO 380 - Comparative Animal Physiology and Anatomy 4.0
    - PDBIO 362 - Advanced Physiology 3.0
    - PWS 440 - Plant Physiology 3.0
- **GROUP 3.1.4** Complete 6 hours from the following course(s)
  - BIO 220 - Biological Diversity: Animals 4.0
  - BIO 330 - Biological Diversity: Plants 4.0
  - BIO 463 - Genetics of Human Disease 3.0
  - MMBIO 151 - Introduction to Microbiology 4.0
  - MMBIO 360 - Microbial Genetics 4.0
  - PDBIO 382 - Developmental Biology 3.0
  - PWS 100 - Plants in the Environment 3.0
  - PWS 301 - Plant Propagation 3.0
  - PWS 399R - Research Internship 3.0
  - You may take up to 1 credit hour.
  - PWS 420 - International Agricultural Development 3.0
  - PWS 586 - Plant Cell Biology 3.0
  - PWS 588 - Metagenomics 3.0

#### OPTION 3.2 Complete 4 groups
B. BUSINESS MINOR CORE TRACK:
- **GROUP 3.2.1** Complete 6 courses
  - ACC 200 - Principles of Accounting 3.0
  - CHEM 285 - Introductory Bio-organic Chemistry 4.0
  - ECON 110 - Economic Principles and Problems 3.0
  - FIN 201 - Principles of Finance 3.0
  - HRM 300 - Organizational Behavior 3.0
  - STRAT 488 - Agribusiness Management 1 3.0

- **GROUP 3.2.2** Complete 1 course
  - MKTG 201 - Marketing Management 3.0
  - STRAT 489 - Agribusiness Management 2 3.0

- **GROUP 3.2.3** Complete 1 course
  - ENT 381 - Entrepreneurship Lecture Series 1.0
  - MSB 380 - Executive Lectures 1.0

- **GROUP 3.2.4** Complete 1 selection
  - **SELECTION 3.2.4.1** Complete 1 course
    - PWS 488 - Readings in Biotechnology 3.0
  - **SELECTION 3.2.4.2** Complete 2 courses
    - PDBIO 444 - BIO-Innovation and Entrepreneurship 1 2.0
    - PDBIO 445 - BIO-Innovation and Entrepreneurship 2 2.0

  **Note:** To complete a minor from the Marriott School of Business, students must take MKTG 201 in group 3.2.2 and one of the following:
  - Math 110, Math 112, Math 116, or IS 201.

### FOR STUDENTS SEEKING EMPLOYMENT IN THE BIOTECH INDUSTRY:
- PWS 199R - Academic Internship 3.0v

### THE DISCIPLINE:
This unique degree is for students who desire combined training in wet-lab and computational analysis of genes and genomes. It is a relatively new discipline representing one of the most exciting developments in biological sciences in the 21st century. Students completing this degree will find themselves in the very forefront of biology in the 21st century.

### CAREER OPPORTUNITIES:
The major is designed to provide a broad range of skills, including the following: quantitative reasoning; interpretation of scientific literature; recognition of historical and current scientific trends; principles of scientific data collection, interpretation, and assimilation; and critical writing. Graduates enter directly into industry, medical schools, or graduate programs in any of the many biological science disciplines.

### HANDS-ON LEARNING OPPORTUNITIES:
Every student in this major is encouraged to seek mentored research opportunities with faculty in the life sciences. Completing one or more of these mentored research opportunities will set students apart and provide experience and credentials valuable in being admitted into the best graduate programs in the U.S.

### FINANCING:
Scholarships are available for qualified students from the department, college, and university.

### HONORARY SOCIETIES AND CLUBS:
The program encourages student participation in the Genetics and Biotechnology Club. Genetics students share a common study area, the Mendel Lab, in room 5114 LSB. Students are also active participants in professional societies, national honor societies, and in other BYU campus academic, service, and social clubs. For more information on the Genetics and Biotechnology Club, contact Dr. Craig Coleman at 801-422-5145.
BS in Genetics, Genomics & Biotechnology (285823)
2020-2021

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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Provo, UT 84602
Telephone: (801) 422-2760

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Provo, UT 84602
Telephone: (801) 422-3042
lifesciences@byu.edu