## University Core Requirements:

### Religion Cornerstones
- Teachings and Doctrine of The Book of Mormon
- Jesus Christ and the Everlasting Gospel
- Foundations of the Restoration
- The Eternal Family

### American Heritage
- First Year Writing
- Advanced Written and Oral Communications

### Quantitative Reasoning
- **Beginning Year**: 1–2
- **First Year**: 3–6.0

### Global and Cultural Awareness
- **Beginning Year**: 1
- **First Year**: 3.0

### Skills
- First Year Writing
- Advanced Written and Oral Communications
- **English Language**: 1–2

### Core Enrichment: Electives
- Religion Electives
- Open Electives

### Arts, Letters, and Sciences
- Civilization 1
- Civilization 2
- Arts
- Letters
- Biological Science
- Physical Science
- Social Science

### Core Enrichment: Electives
- Religion Electives
- Open Electives

*These classes fill both university core and program requirements (14–15 hours overlap)*

## Graduation Requirements:
- Minimum residence hours required: 30.0
- Minimum hours needed to graduate: 120.0

## Suggested Sequence of Courses

### Freshman Year

#### 1st Semester
- First-year Writing or American Heritage*
- REL A 275
- REL A 250
- REL C 225
- REL C 200

#### 2nd Semester
- First-year Writing or American Heritage*
- REL A 250
- MMBIO 151
- CHEM 105
- CHEM 107
- Arts or Letters elective*

**Total Hours**: 15-16.0

### Sophomore Year

#### 3rd Semester
- REL C 225
- MMBIO 240
- MMBIO 241
- PHSCS 105
- Civilization 1 elective
- Social Science elective*

**Total Hours**: 15.0

#### 4th Semester
- REL C 200
- MMBIO 261
- Major elective (Requirement T)
- Civilization 2 elective*
- Languages of Learning (Math or language)

**Total Hours**: 14-15.0

### Junior Year

#### 5th Semester
- Religion elective*
- CHEM 351 or CHEM 285
- MATH 112 or MATH 119 or STAT 121
- Requirement 3 choice
- Major elective (Requirement T)

**Total Hours**: 14-17.0

#### 6th Semester
- Religion elective*
- Requirement 3 choice
- Major electives (Requirement T)
- General elective

**Total Hours**: 14-15.0

### Senior Year

#### 7th Semester
- Religion elective*
- Major elective (Requirement T)
- Requirement 3 choice
- Arts or Letters elective

**Total Hours**: 13-15.0

#### 8th Semester
- Open electives
- Global and Cultural Awareness*
- Requirement 3 choice

**Total Hours**: 14.0

*Quantitative Reasoning can be fulfilled by ACT Math subscore of 22 or higher.

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.

*Double counting options available for some GE courses*
BS in Microbiology (285120)  
2021-2022 Program Requirements (57 - 60 Credit Hours)

<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>Complete 1 course</th>
</tr>
</thead>
<tbody>
<tr>
<td>*BIO 110 - Biology</td>
<td>4.0</td>
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<tr>
<td>CELL 120 - Science of Biology</td>
<td>3.0</td>
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<tr>
<td>MMBIO 121 - General Biology: Health and Disease</td>
<td>3.0</td>
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<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>Complete 4 courses</th>
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<tbody>
<tr>
<td>MMBIO 151 - Introduction to Microbiology</td>
<td>4.0</td>
</tr>
<tr>
<td>MMBIO 240 - Molecular Biology</td>
<td>3.0</td>
</tr>
<tr>
<td>MMBIO 241 - Molecular and Cellular Biology Laboratory</td>
<td>1.0</td>
</tr>
<tr>
<td>MMBIO 261 - Infection and Immunity</td>
<td>3.0</td>
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</tbody>
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<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>Complete 14.0 hours from the following course(s)</th>
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<tbody>
<tr>
<td>MMBIO 360 - Microbial Genetics</td>
<td>4.0</td>
</tr>
<tr>
<td>MMBIO 363 - Microbial Ecology</td>
<td>2.0</td>
</tr>
<tr>
<td>MMBIO 364 - Bacterial Pathogenesis</td>
<td>3.0</td>
</tr>
<tr>
<td>MMBIO 365 - Bacterial Pathogenesis Laboratory</td>
<td>1.0</td>
</tr>
<tr>
<td>MMBIO 366 - Microbial Ecology Laboratory</td>
<td>1.0</td>
</tr>
<tr>
<td>MBBIO 418 - Medical Parasitology</td>
<td>2.0</td>
</tr>
<tr>
<td>MBBIO 461 - Advanced Bacterial Physiology</td>
<td>3.0</td>
</tr>
<tr>
<td>MBBIO 463 - Immunology</td>
<td>3.0</td>
</tr>
<tr>
<td>MBBIO 465 - Virology</td>
<td>3.0</td>
</tr>
<tr>
<td>MBBIO 466 - Virology Laboratory</td>
<td>1.0</td>
</tr>
<tr>
<td>MBBIO 467 - Immunology Lab</td>
<td>1.0</td>
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</tbody>
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<tr>
<th>REQUIREMENT</th>
<th>Complete 4 courses</th>
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<tbody>
<tr>
<td>CHEM 105 - General College Chemistry 1 with Lab (Integrated)</td>
<td>4.0</td>
</tr>
<tr>
<td>CHEM 106 - General College Chemistry 2</td>
<td>3.0</td>
</tr>
<tr>
<td>CHEM 107 - General College Chemistry Laboratory</td>
<td>1.0</td>
</tr>
<tr>
<td>PHSCS 105 - General Physics 1</td>
<td>3.0</td>
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</tbody>
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<th>REQUIREMENT</th>
<th>Complete 1 course</th>
</tr>
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<tbody>
<tr>
<td>CHEM 285 - Introductory Bio-organic Chemistry</td>
<td>4.0</td>
</tr>
<tr>
<td>CHEM 351 - Organic Chemistry 1</td>
<td>3.0</td>
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<tr>
<th>REQUIREMENT</th>
<th>Complete 1 course</th>
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<tbody>
<tr>
<td>*MATH 112 - Calculus 1</td>
<td>4.0</td>
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<tr>
<td>MATH 119 - Introduction to Calculus</td>
<td>4.0</td>
</tr>
<tr>
<td>*STAT 121 - Principles of Statistics</td>
<td>3.0</td>
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<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>Complete 12.0 hours from the following course(s)</th>
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</thead>
<tbody>
<tr>
<td>A COURSE USED TO FULFILL REQUIREMENTS 1-6 MAY NOT BE USED TO FULFIL REQUIREMENT 7. FOR CERTAIN ELECTIVE COURSES, A LIMITED NUMBER OF CREDIT HOURS CAN COUNT TOWARDS THIS ELECTIVE REQUIREMENT.</td>
<td></td>
</tr>
<tr>
<td>BIO 165 - Introduction to Bioinformatics</td>
<td>3.0</td>
</tr>
<tr>
<td>BIO 250 - Evolutionary Medicine</td>
<td>2.0</td>
</tr>
</tbody>
</table>
Environmental microbiologists are concerned with microorganisms that cause pollution as well as those that can degrade pollutants in bioremediation processes. Microbial ecologists work on land and in water studying how microbes recycle dead plants and animals and how they can be used to maintain environmental quality or correct environmental mishaps. Industrial microbiologists fit into many categories. Food microbiologists seek better strains of organisms used to make products; some microbiologists work in pharmaceutical plants, in antibiotic development; others work on the production of solvents and other products from waste material. Microbial geneticists and biotechnologists study microbial gene function, improve desirable microbial qualities and increase understanding of cell-regulation processes. Microbial physiologists and biochemists study life processes that employ microbial systems and conduct basic research on microbial growth and development. Clinical microbiologists are involved in diagnosis and identification of microbial infections and approaches to treatment. Medical microbiologists study the biology of bacterial pathogens and the mechanisms they use to cause disease. Virologists study the biology of viruses, the etiology and mechanisms of viral infections and diseases in biological species, and the use of viruses as molecular and biological tools. Immunologists study the molecular and cellular biology of the immune system and its interactions with microorganisms. Parasitologists study the biology, etiology, and epidemiology of parasites and the mechanisms by which they interact with their hosts. Cell biologists study the molecular biology, signal transduction and cell signaling pathways involved in all aspects of biological function. This includes studies at the molecular level of diseases such as heart disease, cancer, diabetes, and AIDS, etc.

Epidemiologists study disease epidemics with an effort to track down the method and cause of the disease. See faculty advisor for additional career choices.

**RESEARCH OPPORTUNITIES:**
Students are encouraged to participate in laboratory research. Faculty-directed research programs are available to undergraduates throughout the year.

**FINANCING:**
Students may be employed either as research or teaching assistants. Several endowed scholarships are available.

**PROGRAM OBJECTIVES:**
The objectives of the microbiology major program are to provide a conceptual knowledge base and critical thinking skills related to the following areas:
- Microbial cell biology
- Microbial genetics
- Interactions and impact of microorganisms and humans
- Interactions and impact of microorganisms in the environment
- Integrating themes (microbial evolution and diversity)
- Immunology
- Virology
- Parasitology
- Epidemiology
- Cell Biology

**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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