# University Core and Graduation Requirements

## University Core Requirements:

<table>
<thead>
<tr>
<th>Requirements</th>
<th>#Classes</th>
<th>Hours</th>
<th>Classes</th>
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</thead>
<tbody>
<tr>
<td>Religion Cornerstones</td>
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<tr>
<td>Teachings and Doctrine of The Book</td>
<td>1</td>
<td>2.0</td>
<td>REL A 275</td>
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<tr>
<td>of Mormon</td>
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<tr>
<td>Jesus Christ and the Everlasting</td>
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<td>REL A 250</td>
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<td>Gospel</td>
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<td>Foundations of the Restoration</td>
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<tr>
<td>The Eternal Family</td>
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<td>REL C 200</td>
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<td>The Individual and Society</td>
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<tr>
<td>American Heritage</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td>Skills</td>
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<tr>
<td>First Year Writing</td>
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<td>WRTG 316*</td>
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<tr>
<td>Advanced Written and Oral</td>
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<td>3.0</td>
<td>MATH 112* or 113*</td>
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<td>Communications</td>
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<tr>
<td>Quantitative Reasoning</td>
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<td>4.0</td>
<td>MATH 112* or 113*</td>
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<tr>
<td>Languages of Learning (Math or</td>
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<td>MATH 112* or 113*</td>
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<td>Language)</td>
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<td>Arts, Letters, and Sciences</td>
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<td>Civilization 1</td>
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<td>Civilization 2</td>
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<tr>
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<td>Physical Science</td>
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<td>CHEM 105* &amp; PHSCS 121*</td>
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<td>Social Science</td>
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<td>Core Enrichment: Electives</td>
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<td>Religion Electives</td>
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<td>Open Electives</td>
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<td>Variable</td>
<td>personal choice</td>
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</tbody>
</table>

*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (18–22 hours overlap)*

## Graduation Requirements:

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

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**FOR UNIVERSITY CORE OR PROGRAM QUESTIONS, CONTACT THE ADVISEMENT CENTER.**
## BS in Computer Science: Bioinformatics (693222)
### 2022-2023 Program Requirements (88 Credit Hours)

### REQUIREMENT 1
Complete 8 courses

**COMPUTER SCIENCE CORE:**
- C S 111 - Introduction to Computer Science 3.0
- C S 224 - Introduction to Computer Systems 3.0
- C S 235 - Data Structures and Algorithms 3.0
- C S 236 - Discrete Structures 3.0
- C S 240 - Advanced Programming Concepts 4.0
- C S 312 - Algorithm Design and Analysis 3.0
- C S 324 - Systems Programming 3.0
- C S 404 - Ethics and Computers in Society 2.0

### REQUIREMENT 2
Complete 7 courses

**BIOLOGY CORE:**
- BIO 130 - Biology 4.0
- BIO 165 - Introduction to Bioinformatics 3.0
- BIO 264 - Statistical Analysis for Biologists 4.0
- BIO 364 - Bioinformatics Algorithms 3.0
- BIO 465 - Capstone in Bioinformatics 3.0
- MMBIO 240 - Molecular Biology 3.0
- PWS 340 - Genetics 3.0

### REQUIREMENT 3
Complete 6 courses

**SUPPORTING COURSES:**
- CHEM 105 - General College Chemistry 1 with Lab (Integrated) 4.0
- MATH 112 - Calculus 1 4.0
- MATH 113 - Calculus 2 4.0
- MATH 213 - Elementary Linear Algebra 2.0
- MATH 215 - Computational Linear Algebra 1.0
- WRTG 316 - Technical Communication 3.0

### REQUIREMENT 4
Complete 1 course

- BIO 250 - Evolutionary Medicine 2.0

### REQUIREMENT 5
Complete 1 course

- C S 472 - Introduction to Machine Learning 3.0
- C S 474 - Introduction to Deep Learning 3.0

### REQUIREMENT 6
Complete 12.0 hours from the following option(s)
**COURSES WILL NOT DOUBLE COUNT BETWEEN REQUIREMENT 5 AND REQUIREMENT 6.**

**OPTION 6.1** Complete up to 12.0 hours from the following course(s)
**COMPLETE 4-5 ELECTIVE COURSES (12-15 CREDIT HOURS) FROM THE FOLLOWING LIST:**
- BIO 463 - Genetics of Human Disease 3.0
- C S 260 - Web Programming 3.0
- C S 329 - Testing, Analysis, and Verification 3.0
- C S 330 - Concepts of Programming Languages 3.0
- C S 345 - Operating Systems Design 3.0
- C S 355 - Interactive Graphics and Image Processing 3.0
- C S 356 - Designing the User Experience 3.0
- C S 393 - Advanced Algorithms and Problem Solving 3.0
- C S 401R - Topics in Computer Science 3.0
- C S 405 - Creating and Managing a Software Business 3.0
- C S 412 - Linear Programming and Convex Optimization 3.0
- C S 428 - Software Engineering 3.0
- C S 431 - Algorithmic Languages and Compilers 3.0
- C S 450 - Computer Vision 3.0
- C S 452 - Database Modeling Concepts 3.0
- C S 453 - Fundamentals of Information Retrieval 3.0
- C S 455 - Computer Graphics 3.0
- C S 456 - Introduction to User Interface Software 3.0
- C S 460 - Computer Communications and Networking 3.0
- C S 462 - Large-Scale Distributed System Design 3.0
- C S 465 - Computer Security 3.0
- C S 470 - Introduction to Artificial Intelligence 3.0
- C S 471 - Voice User Interfaces 3.0
- C S 472 - Introduction to Machine Learning 3.0
- C S 474 - Introduction to Deep Learning 3.0
- C S 479 - (Not currently offered) 3.0
- C S 480 - Software Engineering Capstone 1 3.0
- C S 481 - Software Engineering Capstone 2 3.0
- C S 482 - Data Science Capstone 1 3.0

**OPTION 6.2** Complete up to 6.0 hours from the following course(s)
- C S 491R - Undergraduate Research 3.0
- C S 498R - Undergraduate Special Projects 3.0

### REQUIREMENT 7
Complete Senior Exit Interview with the CS department during your last semester or term.

### THE DISCIPLINE
Computer science touches virtually every area of human endeavor. Software is responsible for everything from the control of kitchen appliances to sophisticated climate models used in predicting future environmental change. Students in computer science learn to approach complex problems in business, science, and entertainment using their strong background in mathematics, algorithms, and data structures.

The degree programs in the Computer Science Department prepare students to be confident software developers and technical problem solvers. The curriculum also trains students for research into new avenues where computers will have a significant impact.

The BS curriculum is accredited by the Computing Accreditation Commission of ABET.

### CAREER OPPORTUNITIES
Graduates pursue exciting opportunities in graphics, artificial intelligence, software engineering, database design, scientific programming, systems administration, and research at universities and national laboratories.
Students completing the animation emphasis will be prepared for technical positions at animation and game programming studios. Students will learn both the technical and artistic side of creating and implementing digital animations and games.

The bioinformatics emphasis is designed for students who are interested in building software to assist in analyzing biological systems. Students will graduate with a significant background in biology coupled with the software development and analysis skills necessary to implement large bioinformatics applications.

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.

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