# University Core and Graduation Requirements

## 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

### The Individual and Society
- American Heritage: 1-2 classes, 3-6.0 hours
- Global and Cultural Awareness: 1 class, 3.0 hours

### Skills
- First Year Writing: 1 class, 3.0 hours
- Advanced Written and Oral Communications: 1 class, 3.0 hours
- Quantitative Reasoning: 1 class, 4.0 hours
- Languages of Learning (Math or Language): 1-2 classes, 4.0 hours

### Arts, Letters, and Sciences
- Civilization: 1 class, 3.0 hours
- Literature: 1 class, 3.0 hours
- Physical Science: 1 class, 3.0 hours
- Biological Science: 1 class, 3.0 hours

### Core Enrichment: Electives
- Religion Electives: 3-4 classes, 6.0 optional
- Open Electives: Variable

*These classes fill both University Core and Program Requirements (13 hours overlap).

## 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>CS 142</td>
<td>C S 324</td>
</tr>
<tr>
<td>First-Year Writing or American Heritage</td>
<td>C S 324</td>
</tr>
<tr>
<td>MATH 111</td>
<td>WRTG 316</td>
</tr>
<tr>
<td>General Education courses, university requirements, and/or general electives</td>
<td>Religion elective</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>General electives</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>Total Hours</strong></td>
</tr>
<tr>
<td>15.0</td>
<td>16.0</td>
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</tbody>
</table>

### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>3rd Semester</th>
<th>4th Semester</th>
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<tbody>
<tr>
<td>C S 236</td>
<td>C S 240</td>
</tr>
<tr>
<td>C S 224</td>
<td>C S 252</td>
</tr>
<tr>
<td>STAT 121 or STAT 201 or MATH 431</td>
<td>Biological Science</td>
</tr>
<tr>
<td>Civilization I</td>
<td>MATH 213</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>MATH 215</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>Total Hours</strong></td>
</tr>
<tr>
<td>14.0</td>
<td>14.0</td>
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</table>

### JUNIOR YEAR

<table>
<thead>
<tr>
<th>5th Semester</th>
<th>6th Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>C S 312</td>
<td>Computer Science Elective</td>
</tr>
<tr>
<td>C S 340</td>
<td>Computer Science Elective</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td>Computer Science Elective</td>
</tr>
<tr>
<td>15.0</td>
<td>16.0</td>
</tr>
</tbody>
</table>

### SENIOR YEAR

<table>
<thead>
<tr>
<th>7th Semester</th>
<th>8th Semester</th>
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</thead>
<tbody>
<tr>
<td>CS/MATH/Science Elective</td>
<td>Global and Cultural Awareness</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td><strong>Total Hours</strong></td>
</tr>
<tr>
<td>15.0</td>
<td>15.0</td>
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</tbody>
</table>

Note: 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.
BS in Computer Science (693220)
2020-2021 Program Requirements (74 Credit Hours)

Computer science majors, especially those planning graduate work, are advised to acquire a strong background in mathematics, possibly a minor. Personnel in the College of Physical and Mathematical Sciences Advisement Center will advise regarding core courses and suggested general education. Questions regarding curriculum and career decisions should be directed to the undergraduate advisor in the Computer Science Department. Any exceptions must be approved by the department. Students may choose to graduate under later requirements by updating their date of entry into the major at the college advisement center.

Note: No double counting is allowed within the major.

**REQUIREMENT 1: Complete 10 courses**

**CORE COURSES:**
- C S 143: Introduction to Computer Programming 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 252: Introduction to Computational Theory 3.0
- C S 312: Algorithm Design and Analysis 3.0
- C S 324: Systems Programming 3.0
- C S 340: Software Design 3.0
- C S 404: Ethics and Computers in Society 2.0

**REQUIREMENT 2: Complete 3 options**

**SUPPORTING COURSES:**

**OPTION 2.1: Complete 4 courses**
- MATH 112: Calculus 1 4.0
- MATH 113: Calculus 2 4.0
- PHYS 121: Introduction to Newtonian Mechanics 3.0
- WRTG 116: Technical Communication 3.0

**OPTION 2.2: Complete 1 group**

**GROUP 2.2.1: Complete 1 course**
- MATH 313: (Not currently offered)

**GROUP 2.2.2: Complete 2 courses**
- MATH 213: Elementary Linear Algebra 2.0
- MATH 215: Computational Linear Algebra 1.0

**OPTION 3.1: Complete up to 24.0 hours from the following course(s)**

**COMPLETE 1 GROUP:**
- 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 401R: Topics in Computer Science 3.0

You may take up to 3 credit hours.

**OPTION 3.2: Complete up to 9.0 hours from the following course(s)**

**COMPLETE 2 GROUPS:**
- C S 412: Linear Programming and Convex Optimization 3.0
- C S 420: 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 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 486: Verification and Validation 3.0
- C S 501R: Advanced Topics in Computer Science 3.0

You may take up to 3 credit hours.

Note: If C S 401R or C S 501R is chosen, it must be taken for three credit hours.

**OPTION 3.3: Complete up to 9.0 hours from the following course(s)**

**COMPLETE 3 GROUPS:**
- C S 495: Undergraduate Research 3.0
- C S 497R: Undergraduate Research 3.0
- C S 498R: Undergraduate Special Projects 3.0

You may take up to 3 credit hours.

**OPTION 3.4: Complete up to 9.0 hours from the following course(s)**

**COMPLETE 4 GROUPS:**
- C S 540: Computers and Society 4.0
- C S 541: Algorithmic Languages and Compilers 3.0
- C S 542: Database Modeling Concepts 3.0
- C S 546: Introduction to User Interface Software 3.0
- C S 555: Computer Graphics 3.0

You may take up to 6 credit hours.

**OPTION 3.5: Complete up to 9.0 hours from the following course(s)**

**COMPLETE 5 GROUPS:**
- C S 493R: Computing Competitions 3.0
- C S 495: Undergraduate Research 3.0
- C S 497R: Undergraduate Research 3.0
- C S 498R: Undergraduate Special Projects 3.0
- C S 499R: Senior Exit Interview 3.0

You may take up to 3 credit hours.

**OPTION 3.6: Complete up to 9.0 hours from the following course(s)**

**COMPLETE 6 GROUPS:**
- C S 401R: Topics in Computer Science 3.0
- C S 412: Linear Programming and Convex Optimization 3.0
- C S 420: 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 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 486: Verification and Validation 3.0
- C S 501R: Advanced Topics in Computer Science 3.0

You may take up to 3 credit hours.

Note: If C S 493R, C S 497R, or C S 501R is chosen, it must be taken for three credit hours.

**REQUIREMENT 4:**
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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