### University Core Requirements:

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Classes</th>
<th>Hours</th>
<th>Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Religion Cornerstones</strong></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>
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<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td>1</td>
<td>2.0</td>
<td>REL A 250</td>
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<tr>
<td>Foundations of the Restoration</td>
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<td>REL C 225</td>
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<tr>
<td>The Eternal Family</td>
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<td>REL C 200</td>
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<tr>
<td><strong>The Individual and Society</strong></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>
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<tr>
<td><strong>Skills</strong></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>
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<tr>
<td>Advanced Written and Oral Communications</td>
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<td>3.0</td>
<td>WRTG 316</td>
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<tr>
<td>Quantitative Reasoning</td>
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<td>MATH 112* or 113*</td>
</tr>
<tr>
<td>Languages of Learning (Math or Language)</td>
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<td>MATH 112* or 113*</td>
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<tr>
<td><strong>Arts, Letters, and Sciences</strong></td>
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<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>
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<tr>
<td>Biological Science</td>
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<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Physical Science</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Social Science</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
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<tr>
<td><strong>Core Enrichment: Electives</strong></td>
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<tr>
<td>Religion Electives</td>
<td>3-4</td>
<td>6.0</td>
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<tr>
<td>Open Electives</td>
<td>Variable</td>
<td>Variable</td>
<td>personal choice</td>
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</table>

### 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>Hours</th>
</tr>
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<tbody>
<tr>
<td>CS 142</td>
<td>3.0</td>
</tr>
<tr>
<td>First-year Writing or American Heritage</td>
<td>3.0</td>
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<td>MATH 112</td>
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<td>Religion Cornerstone course</td>
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<tr>
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<td><strong>Total Hours</strong></td>
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<table>
<thead>
<tr>
<th>2nd Semester</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CS 202</td>
<td>1.0</td>
</tr>
<tr>
<td>CS 235</td>
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</tr>
<tr>
<td>PHSCS 121 or First-year Writing or American Heritage</td>
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</tr>
<tr>
<td>MATH 113</td>
<td>4.0</td>
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<tr>
<td>Religion Cornerstone course</td>
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<td><strong>Total Hours</strong></td>
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#### SOPHOMORE YEAR

<table>
<thead>
<tr>
<th>3rd Semester</th>
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<tr>
<td>CS 203</td>
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<td>CS 224</td>
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<tr>
<td>CS 236</td>
<td>3.0</td>
</tr>
<tr>
<td>Biological Science</td>
<td>3.0</td>
</tr>
<tr>
<td>Civilization 1</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
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<table>
<thead>
<tr>
<th>4th Semester</th>
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<tbody>
<tr>
<td>CS 240</td>
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<tr>
<td>MATH 213</td>
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<td>MATH 215</td>
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#### JUNIOR YEAR

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<thead>
<tr>
<th>5th Semester</th>
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<tr>
<td>CS 204</td>
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<td>CS 312</td>
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<td>CS 324</td>
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<td>Social Science</td>
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<tr>
<td>STAT 121, STAT 201, or MATH 431</td>
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<table>
<thead>
<tr>
<th>6th Semester</th>
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<tbody>
<tr>
<td>CS 329</td>
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<tr>
<td>CS 340</td>
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<tr>
<td>CS 452</td>
<td>3.0</td>
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<tr>
<td>Letters</td>
<td>3.0</td>
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<tr>
<td>Religion Elective</td>
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#### SENIOR YEAR

<table>
<thead>
<tr>
<th>7th Semester</th>
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<tbody>
<tr>
<td>CS 480</td>
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<td>CS Elective</td>
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<tr>
<td>WRTG 316</td>
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<tr>
<td>Arts</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion Elective</td>
<td>2.0</td>
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<tr>
<td>General education, university requirements, and/or general electives</td>
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<td><strong>Total Hours</strong></td>
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</table>

<table>
<thead>
<tr>
<th>8th Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CS 481</td>
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<tr>
<td>CS Elective</td>
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<tr>
<td>CS Elective</td>
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<tr>
<td>CS Elective</td>
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<tr>
<td>CS 404</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td><strong>Total Hours</strong></td>
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</tbody>
</table>
## BS in Computer Science: Software Engineering (693225)
### 2021-2022 Program Requirements (74 - 76 Credit Hours)

**Grades below C- are not allowed in major courses.**

### REQUIREMENT 1 Complete 16 courses

**CORE COURSES:**
- CS 453 - Introduction to Computer Programming
- CS 202 - Software Engineering Lab 1
- CS 203 - Software Engineering Lab 2
- CS 204 - Software Engineering Lab 3
- CS 224 - Introduction to Computer Systems
- CS 235 - Data Structures and Algorithms
- CS 236 - Discrete Structures
- CS 240 - Advanced Programming Concepts
- CS 312 - Algorithm Design and Analysis
- CS 324 - Systems Programming
- CS 329 - Testing, Analysis, and Verification
- CS 340 - Software Design
- CS 404 - Ethics and Computers in Society
- CS 452 - Database Modeling Concepts
- CS 480 - Software Engineering Capstone 1
- CS 481 - Software Engineering Capstone 2

**REQUIRED 2 Complete 4 courses**

**SUPPORTING COURSES:**
- MATH 112 - Calculus 1
- MATH 113 - Calculus 2
- PHSCS 121 - Introduction to Newtonian Mechanics
- WRTG 316 - Technical Communication

**REQUIRED 3 Complete 1 option**

**OPTION 3.1 Complete 1 course**
- MATH 313 - (Not currently offered)

**OPTION 3.2 Complete 2 courses**
- MATH 213 - Elementary Linear Algebra
- MATH 215 - Computational Linear Algebra

**REQUIRED 4 Complete 1 course**

- STAT 121 - Principles of Statistics
- STAT 201 - Statistics for Engineers and Scientists

**REQUIRED 5 Complete 2 courses**
- CS 260 - Web Programming
- CS 330 - Concepts of Programming Languages
- CS 345 - Operating Systems Design
- CS 356 - Designing the User Experience
- CS 453 - Fundamentals of Information Retrieval

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>C S 456 - Introduction to User Interface Software</td>
<td>3.0</td>
</tr>
<tr>
<td>C S 460 - Computer Communications and Networking</td>
<td>3.0</td>
</tr>
<tr>
<td>C S 462 - Large-Scale Distributed System Design</td>
<td>3.0</td>
</tr>
<tr>
<td>C S 465 - Computer Security</td>
<td>3.0</td>
</tr>
<tr>
<td>C S 486 - Verification and Validation</td>
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</tr>
</tbody>
</table>

**REQUIRED 6 Complete 2 courses**

**CORE COURSES:**
- CS 252 - Introduction to Computational Theory
- CS 260 - Web Programming
- CS 330 - Concepts of Programming Languages
- CS 345 - Operating Systems Design
- CS 355 - Interactive Graphics and Image Processing
- CS 356 - Designing the User Experience
- CS 393 - Advanced Algorithms and Problem Solving
- CS 401R - Topics in Computer Science
- CS 405 - Creating and Managing a Software Business
- CS 412 - Linear Programming and Convex Optimization
- CS 450 - Computer Vision
- CS 453 - Fundamentals of Information Retrieval
- CS 455 - Computer Graphics
- CS 456 - Introduction to User Interface Software
- CS 460 - Computer Communications and Networking
- CS 462 - Large-Scale Distributed System Design
- CS 465 - Computer Security
- CS 470 - Introduction to Artificial Intelligence
- CS 471 - Voice User Interfaces
- CS 472 - Introduction to Machine Learning
- CS 474 - Introduction to Deep Learning
- CS 486 - Verification and Validation
- CS 493R - Computing Competitions

You may take up to 3 credit hours.

**OPTION 3.3 Complete 2 courses**

- IT&C 567 - Cybersecurity and Penetration Testing
- MATH 411 - Numerical Methods
- MATH 431 - Probability Theory
- MATH 485 - Mathematical Cryptography

**REQUIRED 7 Complete Senior Exit interview with the C S department during last semester or term.**

**Note:** Math 112, Math 113, Phscs 121, WRTG 316, and C S 312 can be used to fill both General Education and program requirements. Advanced Writing and Oral Communication: WRTG 316. Quantitative Reasoning: Math 112 or 113. Languages of Learning: Math 112 or 113. Physical Science: C S 312 or Phscs 121.

### 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

Computer Science Department
Brigham Young University
3361 Talmage Building
Provo, UT 84602
Telephone: (801) 422-3027

### ADVISEMENT CENTER INFORMATION

Physical and Mathematical Sciences College Advisement Center
Brigham Young University
N-181 ESC
Provo, UT 84602
Telephone: (801) 422-2674