<table>
<thead>
<tr>
<th>University Core Requirements:</th>
<th>Suggested Sequence of Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>University Core Requirements:</strong></td>
<td><strong>FRESHMAN YEAR</strong></td>
</tr>
<tr>
<td><strong>Requirements</strong></td>
<td><strong>1st Semester</strong></td>
</tr>
<tr>
<td><strong>#Classes</strong></td>
<td><strong>Hours</strong></td>
</tr>
<tr>
<td><strong>Religion Cornerstones</strong></td>
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</tr>
<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
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<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
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<tr>
<td>Foundations of the Restoration</td>
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<tr>
<td>The Eternal Family</td>
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<tr>
<td><strong>The Individual and Society</strong></td>
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<tr>
<td>American Heritage</td>
<td>1-2</td>
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<tr>
<td>Global and Cultural Awareness</td>
<td>1</td>
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<tr>
<td><strong>Skills</strong></td>
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<tr>
<td>First Year Writing</td>
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<tr>
<td>Advanced Written and Oral Communications</td>
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<tr>
<td>Quantitative Reasoning</td>
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<tr>
<td>Languages of Learning (Math or Language)</td>
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<tr>
<td><strong>Arts, Letters, and Sciences</strong></td>
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<tr>
<td>Civilization 1</td>
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<tr>
<td>Civilization 2</td>
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<td>Arts</td>
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<td>Letters</td>
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<td>Biological Science</td>
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<td>Physical Science</td>
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<tr>
<td>Social Science</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>
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<tr>
<td>Open Electives</td>
<td>Variable</td>
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<tr>
<td><strong>Graduation Requirements:</strong></td>
<td></td>
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<tr>
<td>Minimum residence hours required</td>
<td>30.0</td>
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<tr>
<td>Minimum hours needed to graduate</td>
<td>120.0</td>
</tr>
</tbody>
</table>

BS in Computer Science: Software Engineering (693225) MAP Sheet
Physical and Mathematical Sciences, Computer Science
For students entering the degree program during the 2020-2021 curricular year.
**Grades below C- are not allowed in major courses.**

### REQUIREMENT 1
Complete 16 courses

**CORE COURSES:**
- CS 142 - Introduction to Computer Programming
- CS 202 - Software Engineering Lab 1
- CS 203 - Software Engineering Lab 2
- 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

### REQUIREMENT 2
Complete 4 courses

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

### REQUIREMENT 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

### REQUIREMENT 4
Complete 1 course

**STAT 121 - Principles of Statistics**

**STAT 201 - Statistics for Engineers and Scientists**

### REQUIREMENT 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

**COURSES WILL NOT DOUBLE COUNT BETWEEN REQUIREMENT 5 AND REQUIREMENT 6.**

### REQUIREMENT 6
Complete 2 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 401R - Topics in Computer Science
- 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 472 - Introduction to Machine Learning
- CS 474 - Introduction to Deep Learning
- CS 486 - Verification and Validation
- CS 493R - Computing Competitions
- CS 497R - Undergraduate Research
- CS 498R - Undergraduate Special Projects
- CS 501R - Advanced Topics in Computer Science
- CS 513 - Robust Control
- EC EN 424 - Computer Systems
- EC EN 425 - Real-Time Operating Systems

**REQUIREMENT 6.**

- C S 493R, C S 498R or C S 501R must be taken for 3 credit hours.

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

**Note:** Math 112, Math 113, Phscs 121, Engl 316, and C S 312 can be used to fill both General Education and program requirements. Advanced Writing and Oral Communication: Engl 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

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Brigham Young University
N-181 ESC
Provo, UT 84602
Telephone: (801) 422-2674