### University Core Requirements:

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Classes</th>
<th>Hours</th>
<th>Classes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion Cornerstones</td>
<td></td>
<td></td>
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<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>
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<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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<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>
<td>1-2</td>
<td>3.0-6.0</td>
<td>from approved list</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td>3.0</td>
<td>from approved list</td>
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<tr>
<td>Skills</td>
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<tr>
<td>First Year Writing</td>
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<td>Advanced Written and Oral Communications</td>
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<td>WRTG 316</td>
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<td>Quantitative Reasoning</td>
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<td>MATH 112&quot; or 113&quot;</td>
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<td>Languages of Learning (Math or Language)</td>
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<td>MATH 112&quot; or 113&quot;</td>
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<tr>
<td>Arts, Letters, and Sciences</td>
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<tr>
<td>Civilization 1</td>
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<td>from approved list</td>
<td></td>
</tr>
<tr>
<td>Civilization 2</td>
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<tr>
<td>Arts</td>
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<td>3.0</td>
<td>from approved list</td>
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<tr>
<td>Letters</td>
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<td>from approved list</td>
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<tr>
<td>Biological Science</td>
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<tr>
<td>Physical Science</td>
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<tr>
<td>Social Science</td>
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<td>3.0</td>
<td>from approved list</td>
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</tr>
<tr>
<td>Core Enrichment: Electives</td>
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</tr>
<tr>
<td>Religion Electives</td>
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<td>from approved list</td>
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<tr>
<td>Open Electives</td>
<td>Variable</td>
<td>Variable</td>
<td>personal choice</td>
<td></td>
</tr>
</tbody>
</table>

### Graduation Requirements:

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

### Suggested Sequence of Courses

#### FRESHMAN YEAR

**1st Semester**
- C S 142: 3.0
- First-year Writing or American Heritage: 3.0
- MATH 112: 4.0
- Religion Cornerstone course: 2.0
- General education, university requirements, and/or general electives: 3.0
- **Total Hours**: 15.0

**2nd Semester**
- C S 202: 1.0
- C S 235: 3.0
- PHSCS 121: 3.0
- First-year Writing or American Heritage: 3.0
- MATH 113: 4.0
- Religion Cornerstone course: 2.0
- **Total Hours**: 16.0

#### SOPHOMORE YEAR

**3rd Semester**
- C S 203: 1.0
- C S 224: 3.0
- C S 236: 3.0
- Biological Science: 3.0
- Civilization 1: 3.0
- Religion Cornerstone course: 2.0
- **Total Hours**: 15.0

**4th Semester**
- C S 240: 4.0
- C S 260 or other C S elective: 3.0
- MATH 211: 2.0
- MATH 215: 1.0
- Civilization 2: 3.0
- Religion Cornerstone course: 2.0
- **Total Hours**: 15.0

#### JUNIOR YEAR

**5th Semester**
- C S 204: 1.0
- C S 312: 3.0
- C S 324: 3.0
- Social Science: 3.0
- STAT 121, STAT 201, or MATH 431: 3.0
- Religion Elective: 2.0
- **Total Hours**: 15.0

**6th Semester**
- C S 329: 3.0
- C S 340: 3.0
- C S 452: 3.0
- Letters: 3.0
- Religion Elective: 2.0
- **Total Hours**: 14.0

#### SENIOR YEAR

**7th Semester**
- C S 480: 3.0
- C S Elective: 3.0
- WRTG 316: 3.0
- Arts: 3.0
- Religion Elective: 2.0
- General education, university requirements, and/or general electives: 2.0
- **Total Hours**: 16.0

**8th Semester**
- C S 481: 3.0
- C S 404: 3.0
- Global and Cultural Awareness: 3.0
- **Total Hours**: 14.0
<table>
<thead>
<tr>
<th>REQUIREMENT 4 Complete 16 courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>CORE COURSES:</td>
</tr>
<tr>
<td>C S 453 - Introduction to User Interface Software</td>
</tr>
<tr>
<td>C S 460 - Computer Communications and Networking</td>
</tr>
<tr>
<td>C S 462 - Large-Scale Distributed System Design</td>
</tr>
<tr>
<td>C S 465 - Computer Security</td>
</tr>
<tr>
<td>C S 486 - Verification and Validation</td>
</tr>
<tr>
<td>REQUIREMENT 5 Complete 2 courses</td>
</tr>
<tr>
<td>SUPPORTING COURSES:</td>
</tr>
<tr>
<td>C S 450 - Computer Vision</td>
</tr>
<tr>
<td>C S 453 - Fundamentals of Information Retrieval</td>
</tr>
<tr>
<td>MATH 411 - Numerical Methods</td>
</tr>
<tr>
<td>MATH 412 - Linear Programming and Convex Optimization</td>
</tr>
<tr>
<td>MATH 455 - Computer Graphics</td>
</tr>
<tr>
<td>MATH 456 - Introduction to User Interface Software</td>
</tr>
<tr>
<td>MATH 460 - Computer Communications and Networking</td>
</tr>
<tr>
<td>MATH 465 - Computer Security</td>
</tr>
<tr>
<td>MATH 470 - Introduction to Artificial Intelligence</td>
</tr>
<tr>
<td>MATH 471 - Voice User Interfaces</td>
</tr>
<tr>
<td>MATH 472 - Introduction to Machine Learning</td>
</tr>
<tr>
<td>MATH 474 - Introduction to Deep Learning</td>
</tr>
<tr>
<td>MATH 486 - Verification and Validation</td>
</tr>
<tr>
<td>MATH 493R - Computing Competitions</td>
</tr>
</tbody>
</table>

Grades below C- are not allowed in major courses.

SUPPORTING COURSES:

C S 453
C S 356
C S 345
C S 330
C S 260
STAT 201
STAT 121
PHSCS 121
MATH 113
MATH 112
C S 481
C S 480
C S 480 - Software Engineering Capstone 1
C S 481 - Software Engineering Capstone 2

Complete 2 courses

Complete 1 course

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
C S 260 - Web Programming
C S 330 - Concepts of Programming Languages
C S 345 - Operating Systems Design
C S 356 - Designing the User Experience

Complete 2 courses

Complete 1 course

REQUIREMENT 6 Complete 2 courses
C S 252 - Introduction to Computational Theory
C S 260 - Web Programming
C S 330 - Concepts of Programming Languages
C S 345 - Operating Systems Design
C S 355 - Interactive Graphics and Image Processing
C S 356 - Designing the User Experience
C S 393 - Advanced Algorithms and Problem Solving
C S 401R - Topics in Computer Science
C S 405 - Computing Competitions
C S 405 - Creating and Managing a Software Business
C S 412 - Linear Programming and Convex Optimization
C S 450 - Computer Vision
C S 453 - Fundamentals of Information Retrieval
MATH 411 - Numerical Methods
MATH 412 - Linear Programming and Convex Optimization
MATH 455 - Computer Graphics
MATH 456 - Introduction to User Interface Software
MATH 460 - Computer Communications and Networking
MATH 465 - Computer Security
MATH 470 - Introduction to Artificial Intelligence
MATH 471 - Voice User Interfaces
MATH 472 - Introduction to Machine Learning
MATH 474 - Introduction to Deep Learning
MATH 486 - Verification and Validation
MATH 493R - Computing Competitions

Complete 1 course

You may take up to 3 credit hours.

Note: If C S 493R, C S 498R, or C S 501R is chosen, it 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, 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

BS in Computer Science: Software Engineering (693225)
2021-2022 Program Requirements (74 - 76 Credit Hours)