

# BS in Computer Science: Software Engineering (693225) MAP Sheet

Physical and Mathematical Sciences, Computer Science

For students entering the degree program during the 2019-2020 curricular year.



| University Core and Graduation Requirements  |                 |              |                    | Suggested Sequence of Courses  |             |  |             |
|--|-----------------|--------------|--------------------|--|-------------|--|-------------|
| <b>University Core Requirements:</b>         |                 |              |                    | <b>FRESHMAN YEAR</b>   |             |  |             |
| <b>Requirements</b>                          | <b>#Classes</b> | <b>Hours</b> | <b>Classes</b>     | <u>1st Semester</u>  |             | <b>JUNIOR YEAR</b>   |             |
| <b>Religion Cornerstones</b>                 |                 |              |                    | C S 142  | 3.0         | <u>5th Semester</u>  |             |
| Teachings and Doctrine of The Book of Mormon | 1               | 2.0          | REL A 275          | First-year Writing or American Heritage                              | 3.0         | C S 204  | 1.0         |
| Jesus Christ and the Everlasting Gospel      | 1               | 2.0          | REL A 250          | MATH 112   | 4.0         | C S 312  | 3.0         |
| Foundations of the Restoration               | 1               | 2.0          | REL C 225          | Religion Cornerstone course  | 2.0         | C S 324  | 3.0         |
| The Eternal Family                           | 1               | 2.0          | REL C 200          | General education, university requirements, and/or general electives | 3.0         | Social Science   | 3.0         |
| <b>The Individual and Society</b>            |                 |              |                    | <b>Total Hours</b>   | <b>15.0</b> | STAT 121, STAT 201, or MATH 431                                      | 3.0         |
| American Heritage                            | 1-2             | 3-6.0        | from approved list |  |             | Religion Elective  | 2.0         |
| Global and Cultural Awareness                | 1               | 3.0          | from approved list | <u>2nd Semester</u>  |             | <b>Total Hours</b>   | <b>15.0</b> |
| <b>Skills</b>                                |                 |              |                    | C S 202  | 1.0         | <u>6th Semester</u>  |             |
| First Year Writing                           | 1               | 3.0          | from approved list | C S 235  | 3.0         | C S 329  | 3.0         |
| Advanced Written and Oral Communications     | 1               | 3.0          | from approved list | PHSCS 121  | 3.0         | C S 340  | 3.0         |
| Quantitative Reasoning                       | 1               | 4.0          | from approved list | First-year Writing or American Heritage                              | 3.0         | C S 452  | 3.0         |
| Languages of Learning (Math or Language)     | 1               | 4.0          | from approved list | MATH 113   | 4.0         | Letters  | 3.0         |
| <b>Arts, Letters, and Sciences</b>           |                 |              |                    | Religion Cornerstone course  | 2.0         | Religion Elective  | 2.0         |
| Civilization 1                               | 1               | 3.0          | from approved list | <b>Total Hours</b>   | <b>16.0</b> | <b>Total Hours</b>   | <b>14.0</b> |
| Civilization 2                               | 1               | 3.0          | from approved list | <b>SOPHOMORE YEAR</b>  |             |  |             |
| Arts   | 1               | 3.0          | from approved list | <u>3rd Semester</u>  |             | <u>7th Semester</u>  |             |
| Letters                                      | 1               | 3.0          | from approved list | C S 203  | 1.0         | C S 494  | 3.0         |
| Biological Science                           | 1               | 3.0          | from approved list | C S 224  | 3.0         | C S Elective   | 3.0         |
| Physical Science                             | 1               | 3.0          | from approved list | C S 236  | 3.0         | ENGL 316   | 3.0         |
| Social Science                               | 1               | 3.0          | from approved list | Biological Science   | 3.0         | Arts   | 3.0         |
| <b>Core Enrichment: Electives</b>            |                 |              |                    | Civilization 1   | 3.0         | Religion Elective  | 2.0         |
| Religion Electives                           | 3-4             | 6.0          | from approved list | Religion Cornerstone course  | 2.0         | General education, university requirements, and/or general electives | 2.0         |
| Open Electives                               | Variable        | Variable     | personal choice    | <b>Total Hours</b>   | <b>15.0</b> | <b>Total Hours</b>   | <b>16.0</b> |
| <b>Graduation Requirements:</b>              |                 |              |                    | <u>4th Semester</u>  |             | <u>8th Semester</u>  |             |
| Minimum residence hours required             |                 | 30.0         |                    | C S 240  | 4.0         | C S 495  | 3.0         |
| Minimum hours needed to graduate             |                 | 120.0        |                    | C S 260 or other C S elective  | 3.0         | C S Elective   | 3.0         |
|  |                 |              |                    | MATH 213   | 2.0         | C S Elective   | 3.0         |
|  |                 |              |                    | MATH 215   | 1.0         | C S 404  | 2.0         |
|  |                 |              |                    | Civilization 2   | 3.0         | Global and Cultural Awareness  | 3.0         |
|  |                 |              |                    | Religion Cornerstone course  | 2.0         | <b>Total Hours</b>   | <b>14.0</b> |
|  |                 |              |                    | <b>Total Hours</b>   | <b>15.0</b> |  |             |

## BS in Computer Science: Software Engineering (693225)

### 2019-2020 Program Requirements (74 - 76 Credit Hours)

|   |   |  |
|---|---|--|
| <p><b>Grades below C- are not allowed in major courses.</b></p> <p><b>REQUIREMENT 1</b> Complete 14 courses</p> <p><b>CORE COURSES:</b></p> <p>C S 142 - Introduction to Computer Programming 3.0</p> <p>C S 202 - Software Engineering Lab 1 1.0</p> <p>C S 203 - Software Engineering Lab 2 1.0</p> <p>C S 204 - Software Engineering Lab 3 1.0</p> <p>C S 224 - Introduction to Computer Systems 3.0</p> <p>C S 235 - Data Structures and Algorithms 3.0</p> <p>C S 236 - Discrete Structures 3.0</p> <p>C S 240 - Advanced Programming Concepts 4.0</p> <p>C S 312 - Algorithm Design and Analysis 3.0</p> <p>C S 324 - Systems Programming 3.0</p> <p>C S 329 - Testing, Analysis, and Verification 3.0</p> <p>C S 340 - Software Design and Testing 3.0</p> <p>C S 404 - Ethics and Computers in Society 2.0</p> <p>C S 452 - Database Modeling Concepts 3.0</p> <p><b>Note: A student may only take CS 494 and 495 or take CS 480 and 481.</b></p> <p><b>REQUIREMENT 2</b> Complete 1 option</p> <p><b>OPTION 2.1</b> Complete 1 course</p> <p>C S 494 - Capstone 1 3.0</p> <p><b>OPTION 2.2</b> Complete 1 course</p> <p>C S 480 - (Not currently offered)</p> <p><b>REQUIREMENT 3</b> Complete 1 option</p> <p><b>OPTION 3.1</b> Complete 1 course</p> <p>C S 495 - Capstone 2 3.0</p> <p><b>OPTION 3.2</b> Complete 1 course</p> <p>C S 481 - (Not currently offered)</p> <p><b>Note: Students should complete the sections of C S 494 and 495 designated for the Software Engineering emphasis.</b></p> <p><b>REQUIREMENT 4</b> Complete 4 courses</p> <p><b>SUPPORTING COURSES:</b></p> <p>ENGL 316 - Technical Communication 3.0</p> <p>MATH 112 - Calculus 1 4.0</p> <p>MATH 113 - Calculus 2 4.0</p> <p>PHSCS 121 - Introduction to Newtonian Mechanics 3.0</p> <p><b>REQUIREMENT 5</b> Complete 1 option</p> <p><b>OPTION 5.1</b> Complete 1 course</p> <p>MATH 313 - (Not currently offered)</p> | <p><b>OPTION 5.2</b> Complete 2 courses</p> <p>MATH 213 - Elementary Linear Algebra 2.0</p> <p>MATH 215 - Computational Linear Algebra 1.0</p> <p><b>REQUIREMENT 6</b> Complete 1 course</p> <p>STAT 121 - Principles of Statistics 3.0</p> <p>STAT 201 - Statistics for Engineers and Scientists 3.0</p> <p><b>REQUIREMENT 7</b> Complete 2 courses</p> <p>C S 260 - Web Programming 3.0</p> <p>C S 330 - Concepts of Programming Languages 3.0</p> <p>C S 345 - Operating Systems Design 3.0</p> <p>C S 356 - Designing the User Experience 3.0</p> <p>C S 453 - Fundamentals of Information Retrieval 3.0</p> <p>C S 456 - Introduction to User Interface Software 3.0</p> <p>C S 460 - Computer Communications and Networking 3.0</p> <p>C S 462 - Large-Scale Distributed System Design 3.0</p> <p>C S 465 - Computer Security 3.0</p> <p>C S 486 - Verification and Validation 3.0</p> <p><b>REQUIREMENT 8</b> Complete 2 courses</p> <p><b>COURSES WILL NOT DOUBLE COUNT BETWEEN REQUIREMENT 4 AND REQUIREMENT 5.</b></p> <p>C S 252 - Introduction to Computational Theory 3.0</p> <p>C S 260 - Web Programming 3.0</p> <p>C S 330 - Concepts of Programming Languages 3.0</p> <p>C S 345 - Operating Systems Design 3.0</p> <p>C S 355 - Interactive Graphics and Image Processing 3.0</p> <p>C S 356 - Designing the User Experience 3.0</p> <p>C S 401R - Topics in Computer Science 3.0v</p> <p><i>You may take up to 3 credit hours.</i></p> <p>C S 405 - Creating and Managing a Software Business 3.0</p> <p>C S 412 - Linear Programming and Convex Optimization 3.0</p> <p>C S 418 - Bioinformatics 3.0</p> <p>C S 450 - Computer Vision 3.0</p> <p>C S 453 - Fundamentals of Information Retrieval 3.0</p> <p>C S 455 - Computer Graphics 3.0</p> <p>C S 456 - Introduction to User Interface Software 3.0</p> <p>C S 460 - Computer Communications and Networking 3.0</p> <p>C S 462 - Large-Scale Distributed System Design 3.0</p> <p>C S 465 - Computer Security 3.0</p> <p>C S 470 - Introduction to Artificial Intelligence 3.0</p> <p>C S 472 - Introduction to Machine Learning 3.0</p> | <p>C S 474 - Introduction to Deep Learning 3.0</p> <p>C S 486 - Verification and Validation 3.0</p> <p>C S 493R - Computing Competitions 3.0</p> <p><i>You may take up to 3 credit hours.</i></p> <p>C S 497R - Undergraduate Research 3.0</p> <p><i>You may take up to 6 credit hours.</i></p> <p>C S 498R - Undergraduate Special Projects 3.0v</p> <p><i>You may take up to 3 credit hours.</i></p> <p>C S 501R - Advanced Topics in Computer Science 3.0v</p> <p><i>You may take up to 3 credit hours.</i></p> <p>C S 513 - Robust Control 3.0</p> <p>EC EN 424 - Computer Systems 4.0</p> <p>EC EN 425 - Real-Time Operating Systems 4.0</p> <p>IT&amp;C 567 - Cybersecurity and Penetration Testing 3.0</p> <p>MATH 411 - Numerical Methods 3.0</p> <p>MATH 431 - Probability Theory 3.0</p> <p>MATH 485 - Mathematical Cryptography 3.0</p> <p><b>Note: If C S 493R, C S 498R, or C S 501R is chosen, it must be taken for 3 credit hours.</b></p> <p><b>REQUIREMENT 9</b></p> <p>Complete Senior Exit interview with the C S department during last semester or term.</p> <p><b>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.</b></p> <p><b>MAP DISCLAIMER</b></p> <p>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.</p> <p><b>DEPARTMENT INFORMATION</b></p> <p><b>Computer Science Department</b><br/>         Brigham Young University<br/>         3361 Talmage Building<br/>         Provo, UT 84602</p> |
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## **BS in Computer Science: Software Engineering (693225)**

2019-2020

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### **ADVISEMENT CENTER INFORMATION**

#### **Physical and Mathematical Sciences College Advisement Center**

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