### BS in Computer Science: Animation (693223) MAP Sheet

#### Physical and Mathematical Sciences, Computer Science

For students entering the degree program during the 2017-2018 curricular year.

This is a limited-enrollment program requiring departmental admissions approval. Please see the department office for information regarding requirements for admission to this emphasis.

Application deadline: April 15 and October 15 after completing the prerequisite courses listed below.

<table>
<thead>
<tr>
<th>University Core and Graduation Requirements</th>
<th>Suggested Sequence of Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>University Core Requirements:</strong></td>
<td></td>
</tr>
<tr>
<td>Requirements</td>
<td></td>
</tr>
<tr>
<td>#Classes</td>
<td>Hours</td>
</tr>
<tr>
<td>Religion Cornerstones</td>
<td></td>
</tr>
<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
<td>1</td>
</tr>
<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
<td>1</td>
</tr>
<tr>
<td>Foundations of the Restoration</td>
<td>1</td>
</tr>
<tr>
<td>The Eternal Family</td>
<td>1</td>
</tr>
<tr>
<td>The Individual and Society</td>
<td></td>
</tr>
<tr>
<td>American Heritage</td>
<td>1-2</td>
</tr>
<tr>
<td>Global and Cultural Awareness</td>
<td>1</td>
</tr>
<tr>
<td>Skills</td>
<td></td>
</tr>
<tr>
<td>First Year Writing</td>
<td>1</td>
</tr>
<tr>
<td>Advanced Written and Oral Communications</td>
<td>1</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td>1</td>
</tr>
<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
</tr>
<tr>
<td>Arts, Letters, and Sciences</td>
<td></td>
</tr>
<tr>
<td>Civilization 1</td>
<td>1</td>
</tr>
<tr>
<td>Civilization 2</td>
<td>1</td>
</tr>
<tr>
<td>Arts</td>
<td>1</td>
</tr>
<tr>
<td>Letters</td>
<td>1</td>
</tr>
<tr>
<td>Biological Science</td>
<td>1</td>
</tr>
<tr>
<td>Physical Science</td>
<td>1</td>
</tr>
<tr>
<td>Social Science</td>
<td>1</td>
</tr>
<tr>
<td>Core Enrichment: Electives</td>
<td></td>
</tr>
<tr>
<td>Religion Electives</td>
<td>3-4</td>
</tr>
<tr>
<td>Open Electives</td>
<td>Variable</td>
</tr>
</tbody>
</table>

*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (13–23 hours overlap)*

| Graduation Requirements:                           |                               |
| Minimum residence hours required                   | 30.0 |
| Minimum hours needed to graduate                   | 120.0 |

**FRESHMAN YEAR**

<table>
<thead>
<tr>
<th>1st Semester</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C S 142</td>
<td>3.0</td>
</tr>
<tr>
<td>CSANM 150</td>
<td>1.5</td>
</tr>
<tr>
<td>First-year Writing or American Heritage</td>
<td>3.0</td>
</tr>
<tr>
<td>MATH 112</td>
<td>4.0</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
</tr>
<tr>
<td>Total Hours</td>
<td>13.5</td>
</tr>
</tbody>
</table>

**Second Semester**

|                               |                               |
| C S 235                  | 3.0                           |
| C S 324                  | 3.0                           |
| Religion Cornerstone course | 2.0                           |
| Total Hours               | 15.0                          |

**SOPHOMORE YEAR**

<table>
<thead>
<tr>
<th>3rd Semester</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C S 236</td>
<td>3.0</td>
</tr>
<tr>
<td>TMA 102</td>
<td>3.0</td>
</tr>
<tr>
<td>STAT 121 or 201</td>
<td>3.0</td>
</tr>
<tr>
<td>MATH 313</td>
<td>3.0</td>
</tr>
<tr>
<td>General Electives</td>
<td>2.0</td>
</tr>
<tr>
<td>Religion Cornerstone course</td>
<td>2.0</td>
</tr>
<tr>
<td>Total Hours</td>
<td>16.0</td>
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</tbody>
</table>

**4th Semester**

|                               |                               |
| C S 240                  | 4.0                           |
| C S 252                  | 3.0                           |
| TMA 294                  | 3.0                           |
| PHSCS 121               | 3.0                           |
| Religion Cornerstone course | 2.0                      |
| Total Hours               | 15.0                          |

**JUNIOR YEAR**

<table>
<thead>
<tr>
<th>5th Semester</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C S 355</td>
<td>3.0</td>
</tr>
<tr>
<td>C S 340</td>
<td>3.0</td>
</tr>
<tr>
<td>CSANM 354</td>
<td>3.0</td>
</tr>
<tr>
<td>ENGL 316</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion elective</td>
<td>2.0</td>
</tr>
<tr>
<td>Total Hours</td>
<td>14.0</td>
</tr>
</tbody>
</table>

**6th Semester**

|                               |                               |
| C S 312                  | 3.0                           |
| C S 324                  | 3.0                           |
| Computer Science Elective | 3.0                           |
| Total Hours               | 14.0                          |

**SENIOR YEAR**

<table>
<thead>
<tr>
<th>7th Semester</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Civilization 1</td>
<td>3.0</td>
</tr>
<tr>
<td>CSANM 450R or CSANM 459R</td>
<td>3.0</td>
</tr>
<tr>
<td>CS 455</td>
<td>3.0</td>
</tr>
<tr>
<td>CSANM Elective</td>
<td>3.0</td>
</tr>
<tr>
<td>Religion Elective</td>
<td>2.0</td>
</tr>
<tr>
<td>Total Hours</td>
<td>15.5</td>
</tr>
</tbody>
</table>

**8th Semester**

|                               |                               |
| C S 404                  | 2.0                           |
| Computer Science Elective  | 3.0                           |
| Biological Science        | 3.0                           |
| Global and Cultural Awareness/Letters | 3.0                     |
| Social Science            | 3.0                           |
| Total Hours               | 14.0                          |

Note 1: The sequence of courses 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: Animation (693223)
### 2017-2018 Program Requirements (78.5 - 79.5 Credit Hours)

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Course Code</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Requirement 1</strong></td>
<td>C S 340</td>
<td>Concepts of Programming Languages</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Prerequisite Courses:</strong></td>
<td>C S 345</td>
<td>Operating Systems Design</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 401R</td>
<td>Topics in Computer Science</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 412</td>
<td>Linear Programming and Convex Optimization</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 418</td>
<td>Bioinformatics</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 428</td>
<td>Software Engineering</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 431</td>
<td>Algorithmic Languages and Compilers</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 450</td>
<td>Introduction to Digital Signal and Image Processing</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 452</td>
<td>Database Modeling Concepts</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 453</td>
<td>Fundamentals of Information Retrieval</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 456</td>
<td>Introduction to User Interface Software</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 460</td>
<td>Computer Communications and Networking</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 462</td>
<td>Large-Scale Distributed System Design</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 465</td>
<td>Computer Security</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 470</td>
<td>Introduction to Artificial Intelligence</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 478</td>
<td>Tools for Machine Learning</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 479</td>
<td>Natural Language Processing</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 484</td>
<td>Parallel Processing</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>C S 486</td>
<td>Verification and Validation</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>EC EN 425</td>
<td>Real-Time Operating Systems</td>
<td>4.0</td>
</tr>
</tbody>
</table>

**Requirement 7 Complete 1 course**

**NOTE:** If C S 401R, C S 498R, or C S 501R is chosen, it must be taken for three hours.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Course Code</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Requirement 8 Complete 2 courses</strong></td>
<td>TECH 201</td>
<td>History of Creativity and Innovation in the Arts, Science, and Technology</td>
<td>3.0</td>
</tr>
</tbody>
</table>

**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.

DEPARTMENT INFORMATION
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Telephone: (801) 422-3027

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