



BS in COMPUTER SCIENCE (693220) MAP Sheet

Department of Computer Science

For students entering the degree program during the 2016–2017 curricular year.

UNIVERSITY CORE AND GRADUATION REQUIREMENTS				PROGRAM REQUIREMENTS (74-77 total hours)																																																																																																																																			
UNIVERSITY CORE REQUIREMENTS				<p>Note: Grades below C- are not allowed in major courses. Hours of credit applied toward the major must be taken within 8 years of declaring the major. Any exceptions must be approved by the department. Students may choose to graduate under later requirements by updating their date of entry into the major at the college advisement center.</p> <p>Note: No double counting is allowed within the major.</p> <p>Complete the following:</p> <table border="0"> <tr><td>C S</td><td>142</td><td>Introduction to Computer Programming</td><td>3.0</td></tr> <tr><td>C S</td><td>224</td><td>Introduction to Computer Systems</td><td>3.0</td></tr> <tr><td>C S</td><td>235</td><td>Data Structures and Algorithms</td><td>3.0</td></tr> <tr><td>C S</td><td>236</td><td>Discrete Structures</td><td>3.0</td></tr> <tr><td>C S</td><td>240</td><td>Advanced Programming Concepts</td><td>4.0</td></tr> <tr><td>C S</td><td>252</td><td>Introduction to Computational Theory</td><td>3.0</td></tr> <tr><td>C S</td><td>312*</td><td>Algorithm Design & Analysis</td><td>3.0</td></tr> <tr><td>C S</td><td>340</td><td>Software Design and Testing</td><td>3.0</td></tr> <tr><td>C S</td><td>404</td><td>Ethics and Computers in Society</td><td>2.0</td></tr> </table> <p>Complete one of the following:</p> <table border="0"> <tr><td>C S</td><td>345</td><td>Operating Systems Design</td><td>3.0</td></tr> <tr><td>C S</td><td>360</td><td>Internet Programming</td><td>3.0</td></tr> </table> <p>Complete the following supporting courses:</p> <table border="0"> <tr><td>Engl</td><td>316*</td><td>Technical Communication</td><td>3.0</td></tr> <tr><td>Math</td><td>112*</td><td>Calculus 1</td><td>4.0</td></tr> <tr><td>Math</td><td>113*</td><td>Calculus 2</td><td>4.0</td></tr> <tr><td>Math</td><td>313</td><td>Elementary Linear Algebra</td><td>3.0</td></tr> <tr><td>Phscs</td><td>121*</td><td>Intro to Newtonian Mechanics</td><td>3.0</td></tr> </table> <p>Complete one course from the following:</p> <table border="0"> <tr><td>Stat</td><td>121</td><td>Principles of Statistics</td><td>3.0</td></tr> <tr><td>Stat</td><td>201</td><td>Statistics for Engineers & Scientists</td><td>3.0</td></tr> </table> <p>Complete 8 courses from the following three options:</p> <p>A. 6 to 8 of the courses could be from the following:</p> <table border="0"> <tr><td>C S</td><td>256</td><td>Designing the User Experience</td><td>3.0</td></tr> <tr><td>C S</td><td>330</td><td>Concepts of Programming Languages</td><td>3.0</td></tr> <tr><td>C S</td><td>345</td><td>Operating Systems Design</td><td>3.0</td></tr> <tr><td>C S</td><td>355</td><td>Interactive Graphics & Image Processing</td><td>3.0</td></tr> <tr><td>C S</td><td>360</td><td>Internet Programming</td><td>3.0</td></tr> <tr><td>C S</td><td>401R</td><td>Topics in Computer Science</td><td>3.0V</td></tr> <tr><td>C S</td><td>412</td><td>Linear Prog/Conv Optimization</td><td>3.0</td></tr> <tr><td>C S</td><td>418</td><td>Bioinformatics</td><td>3.0</td></tr> <tr><td>C S</td><td>428</td><td>Software Engineering</td><td>3.0</td></tr> <tr><td>C S</td><td>431</td><td>Algorithmic Languages and Compilers</td><td>3.0</td></tr> <tr><td>C S</td><td>450</td><td>Intro to Digital Signal & Image Processing</td><td>3.0</td></tr> <tr><td>C S</td><td>452</td><td>Database Modeling Concepts</td><td>3.0</td></tr> <tr><td>C S</td><td>453</td><td>Fundamentals of Information Retrieval</td><td>3.0</td></tr> <tr><td>C S</td><td>455</td><td>Computer Graphics</td><td>3.0</td></tr> </table> <p>(continued in next column)</p>				C S	142	Introduction to Computer Programming	3.0	C S	224	Introduction to Computer Systems	3.0	C S	235	Data Structures and Algorithms	3.0	C S	236	Discrete Structures	3.0	C S	240	Advanced Programming Concepts	4.0	C S	252	Introduction to Computational Theory	3.0	C S	312*	Algorithm Design & Analysis	3.0	C S	340	Software Design and Testing	3.0	C S	404	Ethics and Computers in Society	2.0	C S	345	Operating Systems Design	3.0	C S	360	Internet Programming	3.0	Engl	316*	Technical Communication	3.0	Math	112*	Calculus 1	4.0	Math	113*	Calculus 2	4.0	Math	313	Elementary Linear Algebra	3.0	Phscs	121*	Intro to Newtonian Mechanics	3.0	Stat	121	Principles of Statistics	3.0	Stat	201	Statistics for Engineers & Scientists	3.0	C S	256	Designing the User Experience	3.0	C S	330	Concepts of Programming Languages	3.0	C S	345	Operating Systems Design	3.0	C S	355	Interactive Graphics & Image Processing	3.0	C S	360	Internet Programming	3.0	C S	401R	Topics in Computer Science	3.0V	C S	412	Linear Prog/Conv Optimization	3.0	C S	418	Bioinformatics	3.0	C S	428	Software Engineering	3.0	C S	431	Algorithmic Languages and Compilers	3.0	C S	450	Intro to Digital Signal & Image Processing	3.0	C S	452	Database Modeling Concepts	3.0	C S	453	Fundamentals of Information Retrieval	3.0	C S	455	Computer Graphics	3.0
C S	142	Introduction to Computer Programming	3.0																																																																																																																																				
C S	224	Introduction to Computer Systems	3.0																																																																																																																																				
C S	235	Data Structures and Algorithms	3.0																																																																																																																																				
C S	236	Discrete Structures	3.0																																																																																																																																				
C S	240	Advanced Programming Concepts	4.0																																																																																																																																				
C S	252	Introduction to Computational Theory	3.0																																																																																																																																				
C S	312*	Algorithm Design & Analysis	3.0																																																																																																																																				
C S	340	Software Design and Testing	3.0																																																																																																																																				
C S	404	Ethics and Computers in Society	2.0																																																																																																																																				
C S	345	Operating Systems Design	3.0																																																																																																																																				
C S	360	Internet Programming	3.0																																																																																																																																				
Engl	316*	Technical Communication	3.0																																																																																																																																				
Math	112*	Calculus 1	4.0																																																																																																																																				
Math	113*	Calculus 2	4.0																																																																																																																																				
Math	313	Elementary Linear Algebra	3.0																																																																																																																																				
Phscs	121*	Intro to Newtonian Mechanics	3.0																																																																																																																																				
Stat	121	Principles of Statistics	3.0																																																																																																																																				
Stat	201	Statistics for Engineers & Scientists	3.0																																																																																																																																				
C S	256	Designing the User Experience	3.0																																																																																																																																				
C S	330	Concepts of Programming Languages	3.0																																																																																																																																				
C S	345	Operating Systems Design	3.0																																																																																																																																				
C S	355	Interactive Graphics & Image Processing	3.0																																																																																																																																				
C S	360	Internet Programming	3.0																																																																																																																																				
C S	401R	Topics in Computer Science	3.0V																																																																																																																																				
C S	412	Linear Prog/Conv Optimization	3.0																																																																																																																																				
C S	418	Bioinformatics	3.0																																																																																																																																				
C S	428	Software Engineering	3.0																																																																																																																																				
C S	431	Algorithmic Languages and Compilers	3.0																																																																																																																																				
C S	450	Intro to Digital Signal & Image Processing	3.0																																																																																																																																				
C S	452	Database Modeling Concepts	3.0																																																																																																																																				
C S	453	Fundamentals of Information Retrieval	3.0																																																																																																																																				
C S	455	Computer Graphics	3.0																																																																																																																																				
				(continued from previous column)																																																																																																																																			
<table border="0"> <thead> <tr> <th>Requirements</th> <th>#Classes</th> <th>Hours</th> <th>Classes</th> </tr> </thead> <tbody> <tr><td colspan="4">Religion Cornerstones</td></tr> <tr><td>Teachings and Doctrine, Book of Mormon</td><td>1</td><td>2.0</td><td>Rel A 275</td></tr> <tr><td>Jesus Christ & the Everlasting Gospel</td><td>1</td><td>2.0</td><td>Rel A 250</td></tr> <tr><td>Foundations of the Restoration</td><td>1</td><td>2.0</td><td>Rel C 225</td></tr> <tr><td>The Eternal Family</td><td>1</td><td>2.0</td><td>Rel C 200</td></tr> <tr><td colspan="4">The Individual and Society</td></tr> <tr><td>Citizenship</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 & Cultural Awareness</td><td>1</td><td>3.0</td><td>from approved list</td></tr> <tr><td colspan="4">Skills</td></tr> <tr><td>Effective Communication</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></tr> <tr><td> Adv Written & Oral Communication</td><td>1</td><td>3.0</td><td>Engl 316*</td></tr> <tr><td>Quantitative Reasoning</td><td>0–1</td><td>0–4.0</td><td>Math 112* or 113*</td></tr> <tr><td>Languages of Learning (Math or Language)</td><td>1</td><td>4.0</td><td>Math 112* or 113*</td></tr> <tr><td colspan="4">Arts, Letters, and Sciences</td></tr> <tr><td>Civilization 1 and 2</td><td>2</td><td>6.0</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></tr> <tr><td>Scientific Principles & Reasoning</td><td></td><td></td><td></td></tr> <tr><td> Biological Science</td><td>1–2</td><td>3–5.0</td><td>from approved list</td></tr> <tr><td> Physical Science</td><td>1</td><td>3.0</td><td>CS 312*</td></tr> <tr><td> Social Science</td><td>1</td><td>3.0</td><td>from approved list</td></tr> <tr><td colspan="4">Core Enrichment: Electives</td></tr> <tr><td>Religion Electives</td><td>3–4</td><td>6.0</td><td>from approved list</td></tr> <tr><td>Open Electives</td><td>Variable</td><td>Variable</td><td>personal choice</td></tr> </tbody> </table>	Requirements	#Classes	Hours	Classes	Religion Cornerstones				Teachings and Doctrine, Book of Mormon	1	2.0	Rel A 275	Jesus Christ & the Everlasting Gospel	1	2.0	Rel A 250	Foundations of the Restoration	1	2.0	Rel C 225	The Eternal Family	1	2.0	Rel C 200	The Individual and Society				Citizenship				American Heritage	1–2	3–6.0	from approved list	Global & Cultural Awareness	1	3.0	from approved list	Skills				Effective Communication				First-Year Writing	1	3.0	from approved list	Adv Written & Oral Communication	1	3.0	Engl 316*	Quantitative Reasoning	0–1	0–4.0	Math 112* or 113*	Languages of Learning (Math or Language)	1	4.0	Math 112* or 113*	Arts, Letters, and Sciences				Civilization 1 and 2	2	6.0	from approved list	Arts	1	3.0	from approved list	Letters	1	3.0	from approved list	Scientific Principles & Reasoning				Biological Science	1–2	3–5.0	from approved list	Physical Science	1	3.0	CS 312*	Social Science	1	3.0	from approved list	Core Enrichment: Electives				Religion Electives	3–4	6.0	from approved list	Open Electives	Variable	Variable	personal choice																											
Requirements	#Classes	Hours	Classes																																																																																																																																				
Religion Cornerstones																																																																																																																																							
Teachings and Doctrine, Book of Mormon	1	2.0	Rel A 275																																																																																																																																				
Jesus Christ & the Everlasting Gospel	1	2.0	Rel A 250																																																																																																																																				
Foundations of the Restoration	1	2.0	Rel C 225																																																																																																																																				
The Eternal Family	1	2.0	Rel C 200																																																																																																																																				
The Individual and Society																																																																																																																																							
Citizenship																																																																																																																																							
American Heritage	1–2	3–6.0	from approved list																																																																																																																																				
Global & Cultural Awareness	1	3.0	from approved list																																																																																																																																				
Skills																																																																																																																																							
Effective Communication																																																																																																																																							
First-Year Writing	1	3.0	from approved list																																																																																																																																				
Adv Written & Oral Communication	1	3.0	Engl 316*																																																																																																																																				
Quantitative Reasoning	0–1	0–4.0	Math 112* or 113*																																																																																																																																				
Languages of Learning (Math or Language)	1	4.0	Math 112* or 113*																																																																																																																																				
Arts, Letters, and Sciences																																																																																																																																							
Civilization 1 and 2	2	6.0	from approved list																																																																																																																																				
Arts	1	3.0	from approved list																																																																																																																																				
Letters	1	3.0	from approved list																																																																																																																																				
Scientific Principles & Reasoning																																																																																																																																							
Biological Science	1–2	3–5.0	from approved list																																																																																																																																				
Physical Science	1	3.0	CS 312*																																																																																																																																				
Social Science	1	3.0	from approved list																																																																																																																																				
Core Enrichment: Electives																																																																																																																																							
Religion Electives	3–4	6.0	from approved list																																																																																																																																				
Open Electives	Variable	Variable	personal choice																																																																																																																																				
GRADUATION REQUIREMENTS:																																																																																																																																							
Minimum residence hours required		30.0																																																																																																																																					
Minimum hours needed to graduate		120.0																																																																																																																																					

*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (13 hours overlap)
FOR UNIVERSITY CORE OR PROGRAM QUESTIONS CONTACT THE ADVISEMENT CENTER
 Physical and Mathematical Sciences College Advisement Center
 N-181 ESC
 Brigham Young University, Provo, UT 84602
 Telephone: (801) 422-2674

FACULTY ADVISOR:
 Paul Roper
 3370 TMCB
 Brigham Young University, Provo, UT 84602
 Telephone: (801) 422-8149

BS in COMPUTER SCIENCE (693220)
2016–2017

Suggested Sequence of Courses:

FRESHMAN YEAR

1st Semester	
C S 142 (FWSpSu)	3.0
1 st Year Writing or A Htg 100	(3.0)
Math 112 (FWSpSu)	4.0
General Elective	3.0
Religion Cornerstone course	2.0
Total Hours	15.0

2nd Semester

C S 224 (FWSpSu)	3.0
C S 235 (FWSpSu)	3.0
A Htg 100 or 1 st Year Writing	(3.0)
Math 113 (FWSpSu)	4.0
Religion Cornerstone course	2.0
Total Hours	15.0

SOPHOMORE YEAR

3rd Semester	
C S 236 (FWSpSu)	3.0
Civilization 1	3.0
Stat 121 or 201 (FWSpSu)	3.0
Phscs 121 (FWSpSu)	3.0
Religion Cornerstone course	2.0
Total Hours	14.0

4th Semester

C S 240 (FWSu)	4.0
C S 252 (FW, alt. terms)	3.0
Biological Science	3.0
Math 313 (FWSpSu)	3.0
Religion Cornerstone course	2.0
Total Hours	15.0

JUNIOR YEAR

5th Semester	
C S 312 (FWSp)	3.0
C S 340 (FW)	3.0
C S 345 (FWSu) or CS 360	3.0
Engl 316 (FWSpSu)	3.0
Religion Elective	2.0
General electives	1.0
Total Hours	15.0

6th Semester

Computer Science Elective	3.0
Computer Science Elective	3.0
C S 404 (FW)	2.0
Computer Science Elective	3.0
Letters	3.0
Religion Elective	2.0
Total Hours	16.0

SENIOR YEAR

7th Semester	
Computer Science Elective	3.0
Computer Science Elective	3.0
Computer Science Elective	3.0
Arts	3.0
Religion Elective	2.0
Total Hours	15.0

8th Semester

CS/Math/ Science Elective	3.0
Computer Science Elective	3.0
Civilization 2	3.0
Global and Cultural Awareness	3.0
Social Science	3.0
Total Hours	15.0

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.

Note: The sequence of courses suggested 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.

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