



BS in COMPUTER SCIENCE (693220) MAP Sheet

Department of Computer Science

For students entering the degree program during the 2009–2010 curricular year.

UNIVERSITY CORE AND GRADUATION REQUIREMENTS				PROGRAM REQUIREMENTS (72-76.0 total hours)		
UNIVERSITY CORE REQUIREMENTS (48.5 hours minimum)				No D credit is allowed in major courses		
Requirements				Complete the following:		
Doctrinal Foundation	#Classes	Hours	Classes	C S 124	Introduction to Computer Systems	3.0
Book of Mormon	2	4.0	Rel A 121/H and 122/H	C S 142	Introduction to Computer Programming	3.0
New Testament	1	2.0	Rel A 211/H or 212/H	C S 235	Data Structures and Algorithms	3.0
Doctrine and Covenants	1	2.0	Rel C 324/H or 325/H	C S 236	Discrete Structures	3.0
The Individual and Society				C S 240	Advanced Programming Concepts	3.0
Wellness	1or3	1.5–2.0	from approved list	C S 252	Introduction to Computational Theory	3.0
Citizenship				C S 312	Algorithm Analysis	3.0
American Heritage	1–2	3–6.0	from approved list	C S 330	Concepts of Programming Languages	3.0
Global & Cultural Awareness	1	3.0	from approved list	C S 340	Software Design and Testing	3.0
Skills				C S 345	Operating Systems Design	3.0
Effective Communication				C S 360	Internet Programming	3.0
First-Year Writing	1	3.0	from approved list	C S 404	Ethics and Computers in Society	2.0
Adv Written & Oral Communication	1	3.0	Engl 316*			
Quantitative Reasoning	0–1	0–4.0	Math 112* or 113*	Complete the following supporting courses:		
Languages of Learning (Math or Language)	1	4.0	Math 112* or 113*	Engl 316*	Technical Writing	3.0
Arts, Letters, and Sciences				Math 112*	Calculus 1	4.0
Civilization 1 and 2	2	6.0	from approved list	Math 113*	Calculus 2	4.0
Arts	1	3.0	from approved list	Math 313	Elementary Linear Algebra	3.0
Letters	1	3.0	from approved list	Phscs 121*	Principles of Physics 1	3.0
Scientific Principles & Reasoning				Stat 221	Principles of Statistics	3.0
Biological Science	1–2	3–6.0	from approved list	Note:	Those who are wishing for a more advanced experience and are prepared, complete Stat 331, 332, or 441; for details see an advisor.	
Physical Science	2	6.0	Phscs 121* and one course from approved list	Complete six courses from the following three options:		
Social Science	1	3.0	from approved list	A. Four to six of the courses could be from the following:		
Core Enrichment: Electives				C S 401R	Topics in Computer Science	3.0V
Religion Electives	3–4	6.0	from approved list	C S 412	Modeling and Optimization	3.0
Open Electives	Variable	Variable	personal choice	C S 418	Bioinformatics	3.0
GRADUATION REQUIREMENTS:				C S 428	Software Engineering	3.0
Minimum residence hours required		30.0		C S 431	Algorithmic Languages and Compilers	3.0
Minimum hours needed to graduate		120.0		C S 450	Intro to Digital Signal & Image Processing	3.0
				C S 452	Database Modeling Concepts	3.0
				C S 455	Computer Graphics	3.0
				C S 456	Introduction to User Interface Software	3.0
				C S 460	Computer Communications & Networking	3.0
				C S 462	Large-Scale Distributed System Design	3.0
				C S 465	Computer Security	3.0
				C S 470	Introduction to Artificial Intelligence	3.0
				C S 476	Introduction to Data Mining	3.0
				C S 478	Intro Neural Networks & Machine Learning	3.0
				C S 479	Natural Language Processing	3.0
				C S 484	Parallel Processing	3.0
				Ec En 324	Computer System Architecture	3.0
				Ec En 425	Real-Time Operating Systems	4.0
				Note:	If C S 401R is chosen, it must be taken for three hours.	
				B. One of the six courses could be from the following:		
				C S 501R	Advanced Topics in Computer Science	3.0V
				C S 557	Computer-Aided Geometric Design	3.0
				C S 579	Natural Language Processing	3.0
				C S 598R	Special Projects	3.0V
				Note:	If either C S 501R or 598R is chosen, it must be taken for 3 hours.	
				C. One of the six courses could be from the following career deepening electives:		
				Chem 112	Principles of Chemistry	
				C S 405	Creating and Managing a Software Business	3.0
				EC En 224	Fundamentals of Digital Systems	3.0
				Geol 112	Historical Geology	3.0
				Math 314	Calculus of Several Variables	4.0
				Math 334	Ordinary Differential Equations	3.0
				Math 341	Theory of Analysis 1	3.0
				Math 355	Graph Theory	3.0
				Math 371	Abstract Algebra 1.	3.0
				Math 410	Intro to Numerical Methods	3.0
				Math 425	Mathematical Biology	3.0
				Math 450	Combinatorics	3.0
				Math 485	Mathematical Cryptography	3.0
				PDBio 120*	Science of Biology	3.0
				Stat 331	Intro to Bayesian Statistics	3.0
					(If not taken to satisfy stat requirement above)	
				Stat 332	Quality Improvement for Industry	3.0
					(If not taken to satisfy stat requirement above)	
				Stat 421	Intro to Probability and Statistical Theory	3.0
				Stat 441	Statistical Theory 1	3.0
					(If not taken to satisfy stat requirement above)	
				Note:	If not taken to satisfy general education requirements, Chem 111, Geol 111, Phscs 123, or Phscs 220 may fulfill this elective requirement.	

*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (10 hours overlap)

FOR UNIVERSITY CORE OR PROGRAM QUESTIONS CONTACT THE ADVISEMENT CENTER

Physical and Mathematical Sciences College Advisement Center
N-179 ESC

Brigham Young University, Provo, UT 84602
Telephone: (801) 422-6270

FACULTY ADVISOR:

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BS in COMPUTER SCIENCE (693220)
2009–2010

Suggested Sequence of Courses:

FRESHMAN YEAR

<u>1st Semester</u>	
C S 142 (FWSpSu)	3.0
1 st Year Writing or A Htg 100	(3.0)
Math 112 (FWSpSu)	4.0
Physical Science (Chem or Geol)	3.0
Rel A 121 (FWSpSu)	2.0
Total Hours	15.0

<u>2nd Semester</u>	
C S 124 (FWSpSu)	3.0
C S 235 (FWSpSu)	3.0
A Htg 100 or 1 st Year Writing	(3.0)
Math 113 (FWSpSu)	4.0
Rel A 122 (FWSpSu)	2.0
Total Hours	15.0

SOPHOMORE YEAR

<u>3rd Semester</u>	
C S 236 (FWSpSu)	3.0
Civilization 1	3.0
Stat 221 (FWSpSu)	3.0
Phscs 121 (FWSpSu)	3.0
Rel A 211 or 212 (FWSpSu)	2.0
Total Hours	14.0

<u>4th Semester</u>	
C S 240 (FWSu)	3.0
C S 252 (FW, alt. terms)	3.0
Bio 100 (Biological Science)	3.0
Math 313 (FWSpSu)	3.0
Rel C 324 or 325	2.0
HEPE 129 (Wellness)	2.0
Total Hours	16.0

JUNIOR YEAR

<u>5th Semester</u>	
C S 312 (FWSp)	3.0
C S 340 (FW)	3.0
C S 345 (FWSu)	3.0
Engl 316 (FWSpSu)	3.0
Religion Elective	2.0
Total Hours	14.0

<u>6th Semester</u>	
C S 330 (FWSp)	3.0
C S 360 (FW)	3.0
C S 404 (FW)	2.0
Computer Science Elective (400 level)	3.0
Letters	3.0
Religion Elective	2.0
Total Hours	16.0

SENIOR YEAR

<u>7th Semester</u>	
Computer Science Elective (400 level)	3.0
Computer Science Elective(400 level)	3.0
Computer Science Elective (400 level)	4.0
Arts	3.0
Religion Elective	2.0
Total Hours	15.0

<u>8th Semester</u>	
CS/Math/ Science Elective	3.0
Computer Science Elective(400-500 level)	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.

For more information on careers in your major, please refer to *From Major to Career*, a publication which is located in all college advisement centers.

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.

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