



BS in COMPUTER SCIENCE (693220) MAP Sheet

Department of Computer Science

For students entering the degree program during the 2008–2009 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			
<u>Requirements</u>	<u>#Classes</u>	<u>Hours</u>	<u>Classes</u>	Complete the following:		Complete one additional course from the following:	
Doctrinal Foundation Book of Mormon 2 4.0 Rel A 121/H and 122/H New Testament 1 2.0 Rel A 211/H or 212/H Doctrine and Covenants 1 2.0 Rel C 324/H or 325/H				C S 124 Introduction to Computer Systems 3.0 C S 142 Introduction to Computer Programming 3.0 C S 235 Data Structures and Algorithms 3.0 C S 236 Discrete Structures 3.0 C S 240 Advanced Programming Concepts 3.0 C S 252 Introduction to Computational Theory 3.0 C S 312 Algorithm Analysis 3.0 C S 330 Concepts of Programming Languages 3.0 C S 340 Software Design and Testing 3.0 C S 345 Operating Systems Design 3.0 C S 360 Internet Programming 3.0 C S 404 Ethics and Computers in Society 2.0		C S 401R Topics in Computer Science 3.0V C S 412 Modeling and 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 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 486 Verification and Validation 3.0 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: C S 598R requires senior or graduate status in computer science & departmental approval before registering.	
The Individual and Society Wellness 1or3 1.5–2.0 from approved list Citizenship 1–2 3–6.0 from approved list American Heritage 1–2 3–6.0 from approved list Global & Cultural Awareness 1 3.0 from approved list				Complete the following supporting courses: Engl 316* Technical Writing 3.0 Math 112* Calculus 1 4.0 Math 113* Calculus 2 4.0 Math 343 Elementary Linear Algebra 3.0 Phscs 121* Principles of Physics 1 3.0 Stat 221 Principles of Statistics 3.0 Note: Those who are wishing for a more advanced experience and are prepared, complete Stat 321, 331, 332, or 441; for details see an advisor		Ec En 324 Computer System Architecture 3.0 Ec En 425 Real-Time Operating Systems 4.0 Note: If either C S 501R or 598R is chosen, it must be taken for three hours.	
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*				Complete four courses from the following: C S 401R Topics in Computer Science 3.0V C S 412 Modeling and 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 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 486 Verification and Validation 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.		Complete one additional course chosen from: C S 401R Topics in Computer Science 3.0V C S 405 Creating and Managing a Software Business 3.0 C S 412 Modeling and Optimization 3.0 C S 418 Bioinformatics 3.0 C S 428 Software Engineering 3.0 C S 431 Algorithmic Languages & Compilers 3.0 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 and Software 3.0 C S 460 Computer Communications and 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	
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 3–6.0 from approved list Physical Science 2 6.0 Phscs 121* and one course from approved list 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 (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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 3370 TMCB

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(continued from front)

C S	476	Introduction to Data Mining	3.0
C S	478	Intro Neural Networks & Machine Learning	3.0
C S	486	Verification and Validation	3.0
Chem	112	Principles of Chemistry	3.0
Ec En	224	Fundamentals of Digital Systems	3.0
Ec En	324	Computer System Architecture	3.0
Ec En	425	Real-Time Operating Systems	4.0
Geol	112	Historical Geology	4.0
Math	214	Calculus of Several Variables	3.0
Math	315	Theory of Analysis	3.0
Math	334	Ordinary Differential Equations	3.0
Math	350	Combinatorics	3.0
Math	355	Graph Theory	3.0
Math	371	Abstract Algebra	3.0
Math	410	Introduction to Numerical Methods	3.0
PDBio	120	Science of Biology	2.0
Stat	321	Elements of Math Statistics	3.0
Stat	331	Intro to Bayesian Statistics	3.0
Stat	332	Quality Improvement	3.0
Stat	421	Introduction to Statistical History	3.0
Stat	441	Stat Theory 1	3.0

Note: If not taken to satisfy University Core requirements, Chem 111, Geol 111, Phscs 123, or Phscs 220 may fulfill this elective requirement.

Suggested Sequence of Courses:

FRESHMAN YEAR

1st Semester

C S 142 (FWSpSu)	3.0
1 st Year Writing	3.0
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

2nd Semester

C S 124 (FWSpSu)	3.0
C S 235 (FWSpSu)	3.0
A Htg 100	3.0
or 1 st Year Writing	(3.0)
Math 113 (FWSpSu)	4.0
Rel A 122 (FWSpSu)	2.0
Total Hours	15.0

SOPHOMORE YEAR

3rd Semester

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

4th Semester

C S 240 (FWSu)	3.0
C S 252 (FW, alt. terms)	3.0
Bio 100 (Biological Science)	3.0
Math 343 (FWSpSu)	3.0
Rel C 324 or 325	2.0
HEPE 129 (Wellness)	2.0
Total Hours	16.0

JUNIOR YEAR

5th Semester

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

6th Semester

C S 330 (FWSp)	3.0
C S 360 (W)	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

7th Semester

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

8th Semester

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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