BS in Computer Science (693220) MAP Sheet

Physcial and Mathematical Sciences, Computer Science
For students entering the degree program during the 2024-2025 curricular year

University Core and Graduation Requirements

University Core Requirements:

Requirements	# Classes	Hours	Classes
Religion Cornerstones			
Teachings and Doctrines of the Book of Mormon	1	2.00	REL A 275
Jesus Chirst and the Everlasting Gospel	1	2.00	REL A 250
Foundations of the Restoration	1	2.00	REL C 225
The Eternal Family	1	2.00	REL C 200
BYU Foundations for Student Success			
Foundations for Student Success	1	2.00	UNIV 101
The Individual and Society			
American Heritage	1 to 2	3.00-6.00	from approved list
Global and Cultural Awareness	1	3.00	from approved list
Skills			
First Year Writing	1	3.00	from approved list
Advanced Written and Oral Communications	1	3.00	WRTG 316*
Quantitative Reasoning	1	4.00	MATH 112*
Languages of Learning (Math of Language)	1	4.00	MATH 112*
Arts, Letters and Sciences (Complete 6 of 7)			
Civilization 1	1	3.00	from approved list
Civilization 2	1	3.00	from approved list
Arts	1	3.00	from approved list
Letters	1	3.00	from approved list
Biological Science	1	3.00-4.00	from approved list
Physical Science	2	3.00	CS 312*
Social Science	1	3.00	from approved list
Core Enrichment: Electives			
Religion Electives	3 to 4	6.00	from approved list
Open Electives	Variable	Variable	personal choice
Graduation Requirements:			
Minimum residence hours requried		30.00	
Minimum hours needed to graduate		120.00	

*These classes fill both university core and program requirements

Suggested Sequence of Courses

FRESHMAN YEAR

1st Semester

CS 111	3.00
CS 191	0.50
MATH 112	4.00
UNIV 101	2.00
American Heritage or First Year Writing	3.00
Religion Cornerstone Class	2.00
Total Hours:	**14.50**

2nd Semester

CS 235	3.00
CS 260	3.00
MATH 290, MATH 113, or STAT 220	3.00-4.00
American Heritage or First Year Writing	4.00
Religion Cornerstone Class	2.00
University Elective	1.00
Total Hours:	**16.00-17.00**

SOPHMORE YEAR

3rd Semester

STAT 121, STAT 201 or MATH 431	3.00
CS 236	3.00
CS 224	3.00
CS 291	0.50
Religion Cornerstone Class	2.00
GE Arts, Letters, Sciences	3.00
Total Hours:	**14.50**

4th Semester

CS 240	4.00
CS 252	3.00
MATH 213	2.00
MATH 215	1.00
Religion Cornerstone Class	2.00
GE Arts, Letters, Sciences	3.00
Total Hours:	**15.00**

JUNIOR YEAR

5th Semester

CS 312	3.00
CS 340	3.00
WRTG 316	3.00
GE Arts, Letters, Sciences	3.00
GE Religion	2.00
Total Hours:	**14.00**

6th Semester

CS 324	3.00
GE Religion	2.00
CS Elective Requirement 5.1	3.00
GE Arts, Letters, Sciences	3.00
CS 404	2.00
CS Elective Requirement 5.1	3.00
Total Hours:	**16.00**

SENIOR YEAR

7th Semester

CS Elective Requirement 5.1	3.00
CS Elective Requirement 5.1	3.00
PHSCS 121	3.00
Religion Elective	2.00
GE Arts, Letters, Sciences	3.00
University Elective	2.00
Total Hours:	**16.00**

8th Semester

CS Elective Requirement 5.1	3.00
CS Elective	3.00
CS Elective	3.00
Global and Cultural Awareness	3.00
University Elective	3.00
Total Hours:	**15.00**

Program Requirements

Computer science majors, especially those planning graduate work, are advised to acquire a strong background in mathematics, possibly a minor.

Personnel in the College of Physical and Mathematical Sciences Advisement Center will advise regarding core courses and suggested general education. Questions regarding curriculum and career decisions should be directed to the undergraduate advisor in the Computer Science Department.

Note: All hours of credit applied toward a major in computer science must be of C- or better and must be taken within eight years of declaring the computer science 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.

Note: No double counting is allowed within the major.

Requirement 1 — Complete 13 Courses

Core courses:

C S 111 - Intro to Computer Science 3.0

C S 191 - Exploring CS 0.5

C S 224 - Computer Systems 3.0

C S 235 - Data Structures 3.0

C S 236 - Discrete Structure 3.0

C S 240 - Adv Software Construction 4.0

C S 252 - Intro to Computational Theory 3.0

C S 260 - Web Programming 3.0

C S 291 - Careers in CS 0.5

C S 312 - Algorithm Design & Analysis 3.0

C S 324 - Systems Programming 3.0

C S 340 - Software Design 3.0

C S 404 - Ethics & Computers in Society 2.0

Requirement 2 — Complete 5 Courses

MATH 112 - Calculus 1 4.0

MATH 213 - Elementary Linear Algebra 2.0

MATH 215 - Computational Linear Algebra 1.0

PHSCS 121 - Intro to Newtonian Mechanics 3.0

WRTG 316 - Technical Communication 3.0

Requirement 3 — Complete 1 of 3 Courses

MATH 431 - Probability Theory 3.0

STAT 121 - Intro to Stat Data Analysis 3.0

STAT 201 - Stat for Engineers & Scientist 3.0

Requirement 4 — Complete 1 of 3 Courses

MATH 113 - Calculus 2 4.0

MATH 290 - Fundamentals of Mathematics 3.0

STAT 220 - Stat Modeling for Data Science 3.0

Requirement 5 — Complete 21 hours

Complete 21.0 hours from the following option(s)

Option 5.1 — Complete up to 21 hours

Complete 12.0 to 21.0 hours from the following course(s)

C S 329 - Test, Analysis, & Verification 3.0

C S 330 - Concepts of Programng Lang 3.0

C S 345 - Operating Systems Design 3.0

C S 355 - Graphics and Image Processing 3.0

C S 356 - Advanced Techniques in HCI 3.0

C S 393 - Adv Algorithms & Probl Solving 3.0

C S 401R - Topics in Computer Science - *You may take up to 3.0 credit hours* 1.0v

C S 412 - Linear Prog/Convx Optimization 3.0

C S 428 - Software Engineering 3.0

C S 431 - Algorithmic Lang & Compilers 3.0

C S 450 - Computer Vision 3.0

C S 452 - Database Modeling Concepts 3.0

C S 453 - Fund of Information Retrieval 3.0

C S 455 - Computer Graphics 3.0

C S 456 - Mobile and Ubiquitous HCI 3.0

C S 460 - Comp Comms & Networking 3.0

C S 462 - Distributed System Design 3.0

C S 465 - Computer Security 3.0

C S 466 - Blockchain Technologies 3.0

C S 470 - Intro Artificial Intelligence 3.0

C S 471 - Voice Interfaces 3.0

C S 473 - Advanced Machine Learning 3.0

C S 474 - Deep Learning 3.0

C S 479 - Intro to Machine Translation 3.0

C S 486 - Verification and Validation 3.0

C S 501R - Adv Topics in Computer Sci - *You may take up to 3.0 credit hours* 1.0v

C S 513 - Robust Control 3.0

C S 556 - Inter Soft Systems 3.0 - *This course is no longer offered.*

C S 574 - Transformers for NLP 3.0

C S 575 - Intro to Network Science 3.0

C S 575 - Intro to Network Science 3.0

C S 580 - Theory of Predictive Modeling 3.0

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

Option 5.2 — Complete up to 6 hours

Courses can not double count between requirement 4 and option 5.2

C S 180 - Intro to Data Science 3.0

C S 202 - Software Engineering Lab 1 1.0

C S 203 - Software Engineering Lab 2 1.0

C S 204 - Software Engineering Lab 3 1.0

C S 256 - Introduction to HCI 3.0

C S 270 - Intro to Machine Learning 3.0

C S 405 - Software Business 3.0

C S 478 - Tools for Machine Learning - *This course is no longer available for registration and will count only if you completed it while it was offered. Please see your college advisement center for possible substitutions.* 3.0

EC EN 220 - Fund of Digital Systems 3.0

MATH 113 - Calculus 2 4.0

MATH 290 - Fundamentals of Mathematics 3.0

STAT 220 - Stat Modeling for Data Science 3.0

Option 5.3 — Complete up to 8 hours

Complete up to 8.0 hours from the following course(s)

EC EN 330 - Intro Embedded Programming 4.0

EC EN 427 - Embedded Systems 4.0

IS 567 - Cybersecurity & Pen Testing 3.0

MATH 485 - Mathematical Cryptography 3.0

Option 5.4 — Complete up to 9 hours

C S 480 - Soft Eng Capstone 1 3.0

C S 481 - Soft Eng Capstone 2 3.0

C S 482 - Data Science Capstone 1 3.0

C S 483 - Data Science Capstone 2 3.0

C S 493R - Computing Competitions - *You may take up to 3.0 credit hours* 3.0

C S 494 - Capstone 1 3.0

C S 495 - Capstone 2 3.0

C S 497R - Undergraduate Research - *You may take up to 6.0 credit hours* 3.0

C S 498R - Undergraduate Special Projects - *You may take up to 3.0 credit hours* 1.0v

Note: If C S 493R, C S 497R, C S 498R, or C S 501R is chosen, it must be taken for three credit hours.

Requirement 6 — Obtain confirmation from your advisement center that you have completed the following:

Complete Senior Exit Interview with the CS department during your last semester or term.

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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ADVISEMENT CENTER INFORMATION

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