BS in Computer Science: Data Science (693224) MAP Sheet

Physical and Mathematical Sciences, Computer Science

For students entering the degree program during the 2021-2022 curricular year.

University Core and Graduation Requirements

University Core Requirements:

Requirements	#Classes	Hours	Classes
Religion Cornerstones			
Teachings and Doctrine of The Book of Mormon	1	2.0	REL A 275
Jesus Christ and 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			
American Heritage	1-2	3-6.0	from approved list
Global and Cultural Awareness	1	3.0	from approved list
Skills			
First Year Writing	1	3.0	from approved list
Advanced Written and Oral Communications	1	3.0	WRTG 316
Quantitative Reasoning	1	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	1	3.0	from approved list
Civilization 2	1	3.0	from approved list
Arts	1	3.0	from approved list
Letters	1	3.0	from approved list
Biological Science	1	3.0	from approved list
Physical Science	1	3.0	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

Suggested Sequence of Courses

FRESHMAN YEAR

1st Semester

C S 142	3.0
First Year Writing or American Heritage	3.0
MATH 112	4.0
General education courses, university requirements, and/or general electives	3.0
Religion Cornerstone course	2.0
Total Hours	**15.0**

2nd Semester

C S 235	3.0
PHSCS 121	3.0
First Year Writing or American Heritage	3.0
MATH 113	4.0
Religion Cornerstone course	2.0
Total Hours	**15.0**

SOPHOMORE YEAR

3rd Semester

C S 224	3.0
C S 236	3.0
Biological Science	3.0
STAT 121 or STAT 201 or MATH 431	3.0
Religion Cornerstone course	2.0
Total Hours	**14.0**

4th Semester

C S 240	4.0
Letters	3.0
Civilization 1	3.0
MATH 213	2.0
MATH 213	1.0
Religion Cornerstone course	2.0
Total Hours	**15.0**

JUNIOR YEAR

5th Semester

C S 312	3.0
C S 324	3.0
STAT 330 or ECON 388	3.0
Social Science	3.0
Civilization 2	3.0
Total Hours	**15.0**

6th Semester

C S 472	3.0
C S 452	3.0
DS Elective	3.0
C S Elective	3.0
Religion Elective	2.0
Total Hours	**14.0**

SENIOR YEAR

7th Semester

C S 474	3.0
C S 494 - DS Capstone 1 or CS elective	3.0
WRTG 316	3.0
Arts	3.0
General education courses, university requirements, and/or general electives	2.0
Religion Elective	2.0
Total Hours	**16.0**

8th Semester

C S 495 - DS Capstone 2 or C S elective	3.0
C S Elective or DS elective	3.0
C S Elective	3.0
C S 404	2.0
Global and Cultural Awareness	3.0
Religion Elective	2.0
Total Hours	**16.0**

BS in Computer Science: Data Science (693224)

2021-2022 Program Requirements (74 Credit Hours)

Grades below C- are not allowed in major courses.

REQUIREMENT 1 Complete 11 courses

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 312 - Algorithm Design and Analysis	3.0
C S 324 - Systems Programming	3.0
C S 404 - Ethics and Computers in Society	2.0
C S 452 - Database Modeling Concepts	3.0
C S 472 - Introduction to Machine Learning	3.0
C S 474 - Introduction to Deep Learning	3.0

REQUIREMENT 2 Complete 4 courses

MATH 112 - Calculus 1	4.0
MATH 113 - Calculus 2	4.0
PHSCS 121 - Introduction to Newtonian Mechanics	3.0
*WRTG 316 - Technical Communication	3.0

REQUIREMENT 3 Complete 1 option

OPTION 3.1 Complete 1 course

MATH 313 - (Not currently offered)

OPTION 3.2 Complete 2 courses

MATH 213 - Elementary Linear Algebra	2.0
MATH 215 - Computational Linear Algebra	1.0

REQUIREMENT 4 Complete 1 course

STAT 121 - Principles of Statistics	3.0
STAT 201 - Statistics for Engineers and Scientists	3.0

REQUIREMENT 5 Complete 1 course

ECON 388 - Introduction to Econometrics	3.0
STAT 330 - Introduction to Regression	3.0

REQUIREMENT 6 Complete 3.0 hours from the following course(s)

C S 412 - Linear Programming and Convex Optimization	3.0
ECON 378 - Statistics for Economists	3.0
ECON 388 - Introduction to Econometrics	3.0
ECON 488 - Applied Econometrics	3.0
ECON 588 - Advanced Econometrics	3.0
LING 581 - Natural Language Processing	3.0
MATH 314 - Calculus of Several Variables	3.0
MATH 413 - Advanced Linear Algebra	3.0
STAT 240 - Probability and Inference 1	3.0
STAT 251 - Introduction to Bayesian Statistics	3.0
STAT 340 - Probability and Inference 2	3.0

REQUIREMENT 7 Complete 12.0 hours from the following course(s)

NOTE: C S 482/483, THE DATA SCIENCE CAPSTONE COURSES, ARE STRONGLY RECOMMENDED.

C S 180 - Introduction to Data Science	3.0
C S 252 - Introduction to Computational Theory	3.0
C S 260 - Web Programming	3.0
C S 329 - Testing, Analysis, and Verification	3.0
C S 330 - Concepts of Programming Languages	3.0
C S 340 - Software Design	3.0
C S 345 - Operating Systems Design	3.0
C S 355 - Interactive Graphics and Image Processing	3.0
C S 356 - Designing the User Experience	3.0
C S 393 - Advanced Algorithms and Problem Solving	3.0
C S 401R - Topics in Computer Science	3.0v
You may take up to 12 credit hours.	
C S 450 - Computer Vision	3.0
C S 453 - Fundamentals of Information Retrieval	3.0
C S 455 - Computer Graphics	3.0
C S 456 - Introduction to User Interface 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
C S 471 - Voice User Interfaces	3.0
C S 482 - Data Science Capstone 1	3.0
C S 483 - Data Science Capstone 2	3.0
C S 486 - Verification and Validation	3.0
C S 497R - Undergraduate Research	3.0
You may take this course up to 1 time.	
C S 501R - Advanced Topics in Computer Science	3.0v
You may take up to 12 credit hours.	

Note: Students can take C S 401R or C S 501R more than once.

Note: Total hours for C S 497R across all requirements cannot exceed 6.0.

REQUIREMENT 8 Complete 3.0 hours from the following course(s)

NOTE: COURSES TAKEN TO FULFILL REQUIREMENTS 4 AND 5 CANNOT DOUBLE COUNT HERE.

C S 180 - Introduction to Data Science	3.0
C S 252 - Introduction to Computational Theory	3.0
C S 260 - Web Programming	3.0
C S 329 - Testing, Analysis, and Verification	3.0
C S 330 - Concepts of Programming Languages	3.0
C S 340 - Software Design	3.0
C S 345 - Operating Systems Design	3.0
C S 355 - Interactive Graphics and Image Processing	3.0
C S 356 - Designing the User Experience	3.0
C S 393 - Advanced Algorithms and Problem Solving	3.0
C S 401R - Topics in Computer Science	3.0v
You may take up to 3 credit hours.	
C S 412 - Linear Programming and Convex Optimization	3.0
C S 450 - Computer Vision	3.0
C S 453 - Fundamentals of Information Retrieval	3.0
C S 455 - Computer Graphics	3.0
C S 456 - Introduction to User Interface 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
C S 471 - Voice User Interfaces	3.0
C S 482 - Data Science Capstone 1	3.0
C S 483 - Data Science Capstone 2	3.0
C S 486 - Verification and Validation	3.0
C S 497R - Undergraduate Research	3.0
You may take this course up to 1 time.	
C S 501R - Advanced Topics in Computer Science	3.0v
You may take up to 3 credit hours.	
ECON 378 - Statistics for Economists	3.0
ECON 388 - Introduction to Econometrics	3.0
ECON 488 - Applied Econometrics	3.0
ECON 588 - Advanced Econometrics	3.0
LING 581 - Natural Language Processing	3.0
MATH 314 - Calculus of Several Variables	3.0
MATH 413 - Advanced Linear Algebra	3.0
STAT 240 - Probability and Inference 1	3.0
STAT 251 - Introduction to Bayesian Statistics	3.0
STAT 340 - Probability and Inference 2	3.0

REQUIREMENT 9

Complete Senior Exit Interview with the Computer Science department during last semester or term.

Note: Math 112, Math 113, Phscs 121, Engl 316, and C S 312 can be used to fill both General Education and program requirements. Advanced Writing and Oral Communication: Engl 316. Quantitative Reasoning: Math 112 or 113. Languages of Learning: Math 112 or 113. Physical Science: C S 312 or Phscs 121.

BS in Computer Science: Data Science (693224)

2021-2022 Program Requirements Cont...

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

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

ADVISEMENT CENTER INFORMATION

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