

BS in Computer Science: Animation and Games (693223) MAP Sheet

Physical and Mathematical Sciences, Computer Science

For students entering the degree program during the 2022-2023 curricular year.

This is a limited-enrollment program requiring departmental admissions approval. Please see the department office for information regarding requirements for admission to this emphasis.

Application deadline: April 15 and December 15 after completing the prerequisite courses listed below.



University Core and Graduation Requirements	Suggested Sequence of Courses	
University Core Requirements:		
Requirements	#Classes	Hours
Religion Cornerstones	Classes	
Teachings and Doctrine of The Book of Mormon	1	2.0
Jesus Christ and the Everlasting Gospel	1	2.0
Foundations of the Restoration	1	2.0
The Eternal Family	1	2.0
The Individual and Society		
American Heritage	1-2	3-6.0
Global and Cultural Awareness	1	3.0
Skills		
First Year Writing	1	3.0
Advanced Written and Oral Communications	1	3.0
Quantitative Reasoning	1	4.0
Languages of Learning (Math or Language)	1	4.0
Arts, Letters, and Sciences		
Civilization 1	1	3.0
Civilization 2	1	3.0
Arts	1	3.0
Letters	1	3.0
Biological Science	1	3-4.0
Physical Science	1	3.0
Social Science	1	3.0
Core Enrichment: Electives		
Religion Electives	3-4	6.0
Open Electives	Variable	Variable
*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (13-23 hours overlap)		
Graduation Requirements:		
Minimum residence hours required		30.0
Minimum hours needed to graduate		120.0
<p>FRESHMAN YEAR</p> <p>1st Semester</p> <p>C S 111 3.0</p> <p>STAT 121 or 201 3.0</p> <p>First-year Writing or American Heritage 3.0</p> <p>MATH 112 4.0</p> <p>Religion Cornerstone course 2.0</p> <p>Total Hours 15.0</p> <p>2nd Semester</p> <p>First-year Writing or American Heritage 3.0</p> <p>C S 235 3.0</p> <p>Physics 121 3.0</p> <p>MATH 113 4.0</p> <p>Religion Cornerstone course 2.0</p> <p>Total Hours 15.0</p> <p>SOPHOMORE YEAR</p> <p>3rd Semester</p> <p>C S 236 3.0</p> <p>CSANM 150 1.5</p> <p>C S 224 3.0</p> <p>Civilization 1 3.0</p> <p>Religion Cornerstone course 2.0</p> <p>Arts 3.0</p> <p>Total Hours 15.5</p> <p>4th Semester</p> <p>C S 240 4.0</p> <p>C S 252 3.0</p> <p>MATH 213 2.0</p> <p>MATH 215 1.0</p> <p>Social Science 3.0</p> <p>Religion Cornerstone course 2.0</p> <p>Total Hours 15.0</p> <p>JUNIOR YEAR</p> <p>5th Semester</p> <p>WRTG 316 3.0</p> <p>C S 324 3.0</p> <p>C S 312 3.0</p> <p>CS 355 3.0</p> <p>Religion elective 2.0</p> <p>Open elective 1.0</p> <p>Total Hours 15.0</p> <p>6th Semester</p> <p>CSANM 354 3.0</p> <p>C S 455 3.0</p> <p>C S 340 3.0</p> <p>Civilization 2 (ARTHC 202) 3.0</p> <p>Global and Cultural Awareness 3.0</p> <p>Total Hours 15.0</p> <p>SENIOR YEAR</p> <p>7th Semester</p> <p>CS 404 2.0</p> <p>CSANM 450R or CSANM 459R 3.0</p> <p>CSANM Elective 3.0</p> <p>Letters 3.0</p> <p>Religion Elective 2.0</p> <p>Open Elective 2.0</p> <p>Total Hours 15.0</p> <p>8th Semester</p> <p>Computer Science Elective 3.0</p> <p>CSANM Elective 3.0</p> <p>Biological Science 3.0</p> <p>CSANM Elective 3.0</p> <p>Religion Elective 2.0</p> <p>Open Elective 1.0</p> <p>Total Hours 15.0</p> <p>Note 1: The sequence of courses may not fit the circumstances of every student. Students should contact their college advisement center for help in outlining an efficient schedule.</p> <p>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.</p> <p>FOR UNIVERSITY CORE OR PROGRAM QUESTIONS, CONTACT THE ADVISEMENT CENTER.</p>		

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2022-2023 Program Requirements (77 - 80.5 Credit Hours)

<p>Grades below C- are not allowed in major courses.</p> <p>REQUIREMENT 1 Complete 3 courses</p> <p>PREREQUISITE COURSES:</p> <p>C S 111 - Introduction to Computer Science 3.0</p> <p>C S 235 - Data Structures and Algorithms 3.0</p> <p>CSANM 150 - Introduction to Three-Dimensional Computer Graphics 1.5</p> <p>Be admitted to the program.</p> <p>REQUIREMENT 2 Complete 10 courses</p> <p>COMPLETE THE FOLLOWING AFTER BEING ADMITTED TO THE PROGRAM:</p> <p>C S 224 - Introduction to Computer Systems 3.0</p> <p>C S 236 - Discrete Structures 3.0</p> <p>C S 240 - Advanced Programming Concepts 4.0</p> <p>C S 252 - Introduction to Computational Theory 3.0</p> <p>C S 312 - Algorithm Design and Analysis 3.0</p> <p>C S 324 - Systems Programming 3.0</p> <p>C S 340 - Software Design 3.0</p> <p>C S 355 - Interactive Graphics and Image Processing 3.0</p> <p>C S 404 - Ethics and Computers in Society 2.0</p> <p>C S 455 - Computer Graphics 3.0</p> <p>REQUIREMENT 3 Complete 5 courses</p> <p>SUPPORTING COURSES:</p> <p>CSANM 354 - Shader Programming 3.0</p> <p>MATH 112 - Calculus 1 4.0</p> <p>MATH 113 - Calculus 2 4.0</p> <p>PHSCS 121 - Introduction to Newtonian Mechanics 3.0</p> <p>*WRTG 316 - Technical Communication 3.0</p> <p>REQUIREMENT 4 Complete 1 option</p> <p>OPTION 4.1 Complete 1 course</p> <p>MATH 313 - (Not currently offered)</p> <p>OPTION 4.2 Complete 2 courses</p> <p>MATH 213 - Elementary Linear Algebra 2.0</p> <p>MATH 215 - Computational Linear Algebra 1.0</p> <p>REQUIREMENT 5 Complete 1 course</p> <p>CSANM 450R - Advanced Senior Film Production 1 3.0</p> <p><i>You may take this course up to 2 times.</i></p> <p>CSANM 459R - Video Game Production 1 3.0</p> <p><i>You may take this course up to 2 times.</i></p> <p>REQUIREMENT 6 Complete 1 course</p> <p>STAT 121 - Principles of Statistics 3.0</p> <p>STAT 201 - Statistics for Engineers and Scientists 3.0</p> <p>REQUIREMENT 7 Complete 1 course</p>	<p>NOTE: IF C S 401R IS CHOSEN, IT MUST BE TAKEN FOR THREE HOURS.</p> <p>C S 260 - Web Programming 3.0</p> <p>C S 329 - Testing, Analysis, and Verification 3.0</p> <p>C S 330 - Concepts of Programming Languages 3.0</p> <p>C S 345 - Operating Systems Design 3.0</p> <p>C S 356 - Designing the User Experience 3.0</p> <p>C S 393 - Advanced Algorithms and Problem Solving 3.0</p> <p>C S 401R - Topics in Computer Science 3.0v</p> <p><i>You may take up to 3 credit hours.</i></p> <p>C S 412 - Linear Programming and Convex Optimization 3.0</p> <p>C S 418 - (Not currently offered)</p> <p>C S 428 - Software Engineering 3.0</p> <p>C S 431 - Algorithmic Languages and Compilers 3.0</p> <p>C S 450 - Computer Vision 3.0</p> <p>C S 452 - Database Modeling Concepts 3.0</p> <p>C S 453 - Fundamentals of Information Retrieval 3.0</p> <p>C S 456 - Introduction to User Interface Software 3.0</p> <p>C S 460 - Computer Communications and Networking 3.0</p> <p>C S 462 - Large-Scale Distributed System Design 3.0</p> <p>C S 465 - Computer Security 3.0</p> <p>C S 470 - Introduction to Artificial Intelligence 3.0</p> <p>C S 471 - Voice User Interfaces 3.0</p> <p>C S 472 - Introduction to Machine Learning 3.0</p> <p>C S 474 - Introduction to Deep Learning 3.0</p> <p>C S 486 - Verification and Validation 3.0</p> <p>EC EN 425 - Real-Time Operating Systems 4.0</p> <p>REQUIREMENT 8 Complete 3 courses</p> <p>COURSES USED TO FULFILL REQUIREMENT 6 CANNOT BE DOUBLE COUNTED HERE. NOTE: IF C S 401R, C S 498R, OR C S 501R IS CHOSEN, IT MUST BE TAKEN FOR THREE HOURS.</p> <p>C S 401R - Topics in Computer Science 3.0v</p> <p><i>You may take up to 3 credit hours.</i></p> <p>C S 412 - Linear Programming and Convex Optimization 3.0</p> <p>C S 418 - (Not currently offered)</p> <p>C S 428 - Software Engineering 3.0</p> <p>C S 431 - Algorithmic Languages and Compilers 3.0</p> <p>C S 450 - Computer Vision 3.0</p> <p>C S 452 - Database Modeling Concepts 3.0</p> <p>C S 453 - Fundamentals of Information Retrieval 3.0</p>	<p>C S 456 - Introduction to User Interface Software 3.0</p> <p>C S 460 - Computer Communications and Networking 3.0</p> <p>C S 462 - Large-Scale Distributed System Design 3.0</p> <p>C S 465 - Computer Security 3.0</p> <p>C S 470 - Introduction to Artificial Intelligence 3.0</p> <p>C S 471 - Voice User Interfaces 3.0</p> <p>C S 472 - Introduction to Machine Learning 3.0</p> <p>C S 474 - Introduction to Deep Learning 3.0</p> <p>C S 486 - Verification and Validation 3.0</p> <p>C S 498R - Undergraduate Special Projects 3.0v</p> <p><i>You may take up to 3 credit hours.</i></p> <p>C S 500 - (CS-Chem-Geol-Math-MthEd-Phscs-Stat) Business Career Essentials 1.5</p> <p>C S 501R - Advanced Topics in Computer Science 3.0v</p> <p><i>You may take up to 3 credit hours.</i></p> <p>C S 513 - Robust Control 3.0</p> <p>C S 580 - Theory of Predictive Modeling 3.0</p> <p>CSANM 252 - Introduction to Three-Dimensional Animation 3.0</p> <p>CSANM 258 - Scripting for Animation 3.0</p> <p>CSANM 340 - Introduction to Game Design 2.0</p> <p>CSANM 342 - Real-time Techniques 3.0</p> <p>CSANM 351R - Lighting for Three-Dimensional Graphics 3.0</p> <p>CSANM 353 - Previsualization 3.0</p> <p>CSANM 355 - Photography for Animation 3.0</p> <p>CSANM 452R - Advanced Senior Film Production 2 3.0</p> <p>CSANM 454 - Advanced Shading 3.0</p> <p>CSANM 458 - Three-Dimensional Visual Effects 3.0</p> <p>CSANM 460R - Video Game Production 2 3.0</p> <p>DESAN 364R - Digital Sculpting 3.0</p> <p>EC EN 425 - Real-Time Operating Systems 4.0</p> <p>REQUIREMENT 9 Complete 1 course</p> <p>ARTHC 111 - Introduction to Art History 3.0</p> <p>ARTHC 202 - World Civilization Since 1500 3.0</p> <p>TMA 294 - History of Animation 3.0</p> <p>REQUIREMENT 10</p> <p>Complete Senior Exit interview with the CS department during your last semester or term.</p>
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2022-2023

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

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