

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

Physical and Mathematical Sciences, Computer Science

For students entering the degree program during the 2024-2025 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:				FRESHMAN YEAR		JUNIOR YEAR	
Requirements	# Classes	Hours	Classes	<u>1st Semester</u>		<u>5th Semester</u>	
Religion Cornerstones				CS 111	3.00	CS 312	3.00
Teachings and Doctrines of the Book of Mormon	1	2.00	REL A 275	CS 191	0.50	CS 355	3.00
Jesus Christ and the Everlasting Gospel	1	2.00	REL A 250	MATH 112	4.00	WR TG 316	3.00
Foundations of the Restoration	1	2.00	REL C 225	UNIV 101	2.00	CS ANM 354 or CS ANM 342	3.00
The Eternal Family	1	2.00	REL C 200	American Heritage or First Year Writing	3.00	GE Religion	2.00
BYU Foundations for Student Success				Religion Cornerstone Class	2.00	Total Hours:	14.00
Foundations for Student Success	1	2.00	UNIV 101	DESAN 101	1.00	<u>6th Semester</u>	
The Individual and Society				Total Hours:	15.50	CS 324	3.00
American Heritage	1 to 2	3.00-6.00	from approved list	<u>2nd Semester</u>		CS 455	3.00
Global and Cultural Awareness	1	3.00	from approved list	CS 235	3.00	GE Arts, Letters, Sciences	3.00
Skills				CS ANM 150	1.50	CS ANM Req 8 Elective	3.00
First Year Writing	1	3.00	from approved list	MATH 290, MATH 113, or STAT 220	3.00-4.00	GE Religion	2.00
Advanced Written and Oral Communications	1	3.00	WR TG 316*	American Heritage or First Year Writing	3.00	University Elective	1.00
Quantitative Reasoning	1	4.00	MATH 112*	Religion Cornerstone Class	2.00	Total Hours:	15.00
Languages of Learning (Math of Language)	1	4.00	MATH 112*	STAT 121 or STAT 201	3.00	SENIOR YEAR	
Arts, Letters and Sciences (Complete 6 of 7)				Total Hours:	15.50-16.50	<u>7th Semester</u>	
Civilization 1	1	3.00	from approved list	SOPHMORE YEAR		CS ANM Req 8 Elective	3.00
Civilization 2	1	3.00	ARTHC 202*	<u>3rd Semester</u>		CS Requirement 9 Elective	3.00
Arts	1	3.00	from approved list	CS ANM 250	3.00	DESAN 460 or CS 404	3.00
Letters	1	3.00	from approved list	ARTHC 202	3.00	CS Requirement 10 Elective	2.00-3.00
Biological Science	1	3.00	from approved list	CS 224	3.00	GE Arts, Letters, Sciences	3.00
Physical Science	2	3.00	CS 312*	CS 236	3.00	Total Hours:	14.00-15.00
Social Science	1	3.00	from approved list	Religion Cornerstone Class	2.00	<u>8th Semester</u>	
Core Enrichment: Electives				CS 291	0.50	CS Requirement 9 Elective	3.00
Religion Electives	3 to 4	6.00	from approved list	Total Hours:	14.50	CS Requirement 10 Elective	3.00
Open Electives	Variable	Variable	personal choice	<u>4th Semester</u>		GE Arts, Letters and Sciences	3.00
Graduation Requirements:				CS 240	4.00	Global and Cultural Awareness	3.00
Minimum residence hours required		30.00		PHSCS 121	3.00	University Elective	1.50
Minimum hours needed to graduate		120.00		MATH 213	2.00	Religion Elective	2.00
				MATH 215	1.00	Total Hours	15.50
				Religion Cornerstone Class	2.00		
				GE Arts, Letters and Sciences	3.00		
				Total Hours:	15.00		

*These classes fill both university core and program requirements

Program Requirements

Grades below C- are not allowed in major courses.

Requirement 1 — Complete 6 Courses

Prerequisite Courses:

C S 111 - Intro to Computer Science 3.0

C S 191 - Exploring CS 0.5

C S 235 - Data Structures 3.0

C S 291 - Careers in CS 0.5

CSANM 150 - Intro to 3D Graphics 1.5

DESAN 101 - Intro to Drawing for Pre-Anim 1.0

Be admitted to the program.

Requirement 2 — Complete 8 Courses

Complete the following after being admitted to the program:

C S 224 - Computer Systems 3.0

C S 236 - Discrete Structure 3.0

C S 240 - Adv Software Construction 4.0

C S 312 - Algorithm Design & Analysis 3.0

C S 324 - Systems Programming 3.0

C S 355 - Graphics and Image Processing 3.0

C S 455 - Computer Graphics 3.0

CSANM 250 - Intern 3D Computer Graphics 2.0

Requirement 3 — Complete 5 Courses

Supporting 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 4 — Complete 1 of 2 Courses

STAT 121 - Intro to Stat Data Analysis 3.0

STAT 201 - Stat for Engineers & Scientist 3.0

Requirement 5 — 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 6 — Complete 1 of 2 Courses

CSANM 342 - Real-time Techniques 3.0

CSANM 354 - Materials and Surfacing 3.0

Requirement 7 — Complete 1 of 2 Courses

C S 404 - Ethics & Computers in Society 2.0

DESAN 460 - Business & Ethics in Animation 2.0

Requirement 8 — Complete 6 hours

CSANM 352 - Animated Film Production 1 - *You may take once 3.0*

CSANM 450 - Animated Film Production 2 - *You may take once 3.0*

CSANM 452 - Animated Film Production 3 - *You may take once 3.0*

CSANM 459 - Video Game Production 1 - *You may take once 3.0*

CSANM 460 - Video Game Production 2 - *You may take once 3.0*

Requirement 9 — Complete 6 hours

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

C S 252 - Intro to Computational Theory 3.0

C S 256 - Introduction to HCI 3.0

C S 260 - Web Programming 3.0

C S 270 - Intro to Machine Learning 3.0

C S 329 - Test, Analysis, & Verification 3.0

C S 330 - Concepts of Program Lang 3.0

C S 340 - Software Design 3.0

C S 345 - Operating Systems Design 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/Conv 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 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 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

C S 479 - Intro to Machine Translation 3.0

C S 486 - Verification and Validation 3.0

C S 556 - Inter Soft Systems 3.0 - *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.

C S 574 - Transformers for NLP 3.0

C S 575 - Intro to Network Science 3.0

Requirement 10 — Complete 6 hours

Courses used to fulfill Requirements 6, 8 and 9 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.

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

C S 412 - Linear Prog/Conv 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 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 - *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

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

C S 500 - Business Career Essentials 1.5

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 available for registration and will count only if you completed it while it was offered.*

Please see your college advisement center for possible substitutions.

C S 574 - Transformers for NLP 3.0

C S 575 - Intro to Network Science 3.0

C S 580 - Theory of Predictive Modeling 3.0

CSANM 210 - Visual Narrative 3.0

CSANM 252 - Intro 3D Animation 3.0

CSANM 258 - Scripting for Animation 3.0

CSANM 340 - Game Design 2.0

CSANM 342 - Real-time Techniques 3.0

CSANM 351R - Lighting for 3D Graphics - *You may take once 3.0*

CSANM 353 - Previsualization 3.0

CSANM 354 - Materials and Surfacing 3.0

CSANM 355 - Photography for Animation 3.0

CSANM 452 - Senior Film Production 2 - *You may take once 3.0*

CSANM 454 - Advanced Shading 3.0

CSANM 458R - 3D Visual Effects 3.0

DESAN 364R - Digital Sculpting - *You may take once 3.0*

EC EN 425 - Real-Time Operating Systems 4.0

Requirement 11 — Complete 1 of 3 Courses

ARTH 111 - Introduction to Art History 3.0

ARTH 202 - World Civilization Since 1500 3.0

TMA 294 - History of Animation 3.0

Requirement 12 — 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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