Welcome to the

Computer Science Major Animation Emphasis

in the College of Physical and Mathematical Sciences

College Advisement Center

Website: https://science.byu.edu/advisement Email: science.math.advisement@byu.edu

Phone: 801-422-2674 Office: N-181 ESC

Computer Science Department

Website: cs.byu.edu

Email: csoffice@cs.byu.edu

Phone: 801-422-3027 Office: 3361 TMCB

Undergraduate Department Advisor – Lynnette Nelson

Email: lnelson@cs.byu.edu

Phone: 801-422-9439 Office: 2250 TMCB

Internship Coordinator – Dennis Ng (International Students only)

Email: ng@compsci.byu.edu

Phone: 801-422-2835 Office: 3322 TMCB

University Career Services – Lane Muranaka

Website: careers.byu.edu (Handshake--see flyer in packet)

Email: lane_muranaka@byu.edu

Phone: 801-422-9360, or 801-422-2674 (schedule appointment)

Office: N221-J ESC

STEM Alliance--Connect with STEM employers, mentors, and clubs: stemalliance.byu.edu Clubs

ACM – Kimball Germane, <u>kimball@cs.byu.edu</u>, and visit acm.byu.edu to join and learn more **AI**— Porter Jenkins, <u>pienkins@cs.byu.edu</u>

 $\begin{tabular}{ll} \textbf{Developers Club} - \textbf{Kimball Germane}, & \underline{\textbf{kimball@cs.byu.edu}}, & \textbf{and visit dev.byu.edu to join and learn more} \\ \end{tabular}$

BYU Competitive Programming Club—Ryan Farrell (2216 TMCB), farrell@cs.byu.edu, 422-3222

Gaming – Seth Holladay (2220 TMCB), seth holladay@byu.edu, 422-6490

Linux Users Group – Casey Deccio (3368 TMCB), linuxclub.cs.byu.edu, 422-5319

Women in Computer Science – Nancy Fulda - <u>nfulda@cs.byu</u>, and visit wics.byu.edu to join and learn more

Learning outcomes can be found here: https://learningoutcomes.byu.edu/Courses/program-courses/693223/Computer+Science+BS+Animation/1323



Things to Know

Resources for Graduation Planning

- Flow Charts and Major Academic Plans (MAPs) can be found here: https://science.byu.edu/advisement/flowcharts.
- Academic advisors in N-181 ESC will help you understand course sequencing and help you plan classes to
 efficiently fill requirements. They can also help you with study skills and initial career exploration as well as
 connecting you with correct resources.
- Plan and register from your plan on MyMAP. Your academic advisor can help you understand how to best utilize
 this resource.
- Evaluate your current program. Periodically major programs are updated. An academic advisor would be happy to review the differences between the programs with you to help you determine what would be best for you.
- o Consider meeting with a faculty advisor in your department. Contact info is found on first page of this packet.

Tutoring Resources and Research

- Volunteer peer tutors are available through Y Serve if you need help with a class. Also, if you excel in a subject, consider serving your fellow students by becoming a tutor. Find out more here: https://tutoring.byu.edu/.
- Many departments provide TA Tutorial Labs and research opportunities. Check your department for details:
 - Chemistry and Biochemistry: C-100 BNSN, 801-422-3667, https://www.chem.byu.edu/
 - Computer Science: 3361 TMCB, 801-422-3027, csoffice@cs.byu.edu
 - Geological Sciences: S-389 ESC, 801-422-3918, geology@byu.edu
 - Mathematics: 275 TMCB, 801-422-2061, office@mathematics.byu.edu
 - Mathematics Education: 167 TMCB, 801-422-1735, office@mathed.byu.edu
 - Physics and Astronomy: N-283 ESC, 801-422-4361, physics_office@byu.edu
 - Statistics: 2152 WVB, 801-422-4505, statsec@stat.byu.edu

Prepare Early for a Career

- o Check out University Career Services in 2590 WSC and at https://ucs.byu.edu/.
- Consider doing an internship.
 - Attend the STEM and Career Fairs held in fall and winter semesters.
 - Talk to your department about internship opportunities.
 - Use LinkedIn and Handshake (see flyer in this packet) to connect with alumni and apply for jobs/internships. BYU Connect is another great resource for networking (connect.byu.edu).
 - Talk with the college Career Director who can help you search for internships as well as assist you with many other career related strategies (see first page of this packet).
- o Consider taking StDev 317 (Career Strategies) your junior year.
- O Consider taking either Chem 502, CS 502, Geol 502, Math 502, PHSCS 502, or STAT 502 (1-credit Job Search Class). Class is held for 1 hour per week for eight non-consecutive weeks throughout the semester.

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:				FRESHMAN YEAR		JUNIOR YEAR		
Requirements	#Classes	Hours	Classes	1st Semester		5th Semester		
Religion Cornerstones				CS111	3.0	WRTG 316	3.0	
				STAT 121 or 201 First-year Writing or American Heritage	3.0 3.0	C S 324 C S 312	3.0 3.0	
Teachings and Doctrine of The Book of	1	2.0	REL A 275	MATH 112	4.0	CS 355	3.0	
Mormon				Religion Cornerstone course	2.0	Religion elective	2.0	
Jesus Christ and the Everlasting Gospel	1		REL A 250	Total Hours	15.0	Open elective	1.0	
Foundations of the Restoration	1		REL C 225	2nd Semester		Total Hours	15.0	
The Eternal Family	1	2.0	REL C 200	First-year Writing or American Heritage	3.0	6th Semester		
The Individual and Society				C S 235	3.0	CSANM 354	3.0	
American Heritage	1-2	3-6.0	from approved list	Physics 121	3.0	C S 455	3.0	
Global and Cultural Awareness	1		from approved list	MATH 113	4.0	C S 340	3.0	
Skills				Religion Cornerstone course Total Hours	2.0 15.0	Civilization 2 (ARTHC 202) Global and Cultural Awareness	3.0 3.0	
					15.0	Total Hours	15.0	
First Year Writing	1		from approved list	SOPHOMORE YEAR 3rd Semester		SENIOR YEAR	13.0	
Advanced Written and Oral Communications	1		WRTG 316*	C S 236	3.0	7th Semester		
Quantitative Reasoning	1	4.0	MATH 112* or 113*	CSANM 150	1.5	CS 404	2.0	
Languages of Learning (Math or Language)	1	4.0	MATH 112* or 113*	C S 224	3.0	CSANM 450R or CSANM 459R	3.0	
Arts, Letters, and Sciences				Civilization 1	3.0	CSANM Elective	3.0	
Civilization 1	1	3.0	from approved list	Religion Cornerstone course	2.0	Letters	3.0	
Civilization 2	1		ARTHC 202* or from	Arts	3.0	Religion Elective	2.0	
CIVILIZATION 2	-	0.0	approved list	Total Hours	15.5	Open Elective Total Hours	2.0	
Arts	1	3.0	from approved list	4th Semester			15.0	
Letters	1		from approved list	C S 240 C S 252	4.0	8th Semester	2.0	
Biological Science	1	3-4.0		MATH 213	3.0 2.0	Computer Science Elective CSANM Elective	3.0 3.0	
•		3.0		MATH 215	1.0	Biological Science	3.0	
Physical Science	1			Social Science	3.0	CSANM Elective	3.0	
Social Science	1	3.0	from approved list	Religion Cornerstone course	2.0	Religion Elective	2.0	
Core Enrichment: Electives				Total Hours	15.0	Open Elective	1.0	
Religion Electives	3-4	6.0	from approved list			Total Hours	15.0	
Open Electives	Variable	Variable	personal choice					
			Note 1: The sequence of courses may not fit the circumstances of every student. Students should contact their college					
*THESE CLASSES FILL BOTH UNIVERSITY CORE A	ND PROGRA	M REQUIF	REMENTS (13-23 hours	advisement center for help in outlining an e	fficient schedule.			
overlap)								
				Note 2: Students are encouraged to comple				
Graduation Requirements:				credit hours each year, which could include	spring and/or summe	er terms. Taking fewer credits substantially i	ncreases the cost	
•				and the number of semesters to graduate.				
Minimum residence hours required		30.0						
Minimum hours needed to graduate 120.0			FOR UNIVERSITY CORE OR PROGRAM QUEST	TIONS, CONTACT THE	ADVISEMENT CENTER.			

BS in Computer Science: Animation and Games (693223)

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

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

BS in Computer Science: Animation and Games (693223) 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

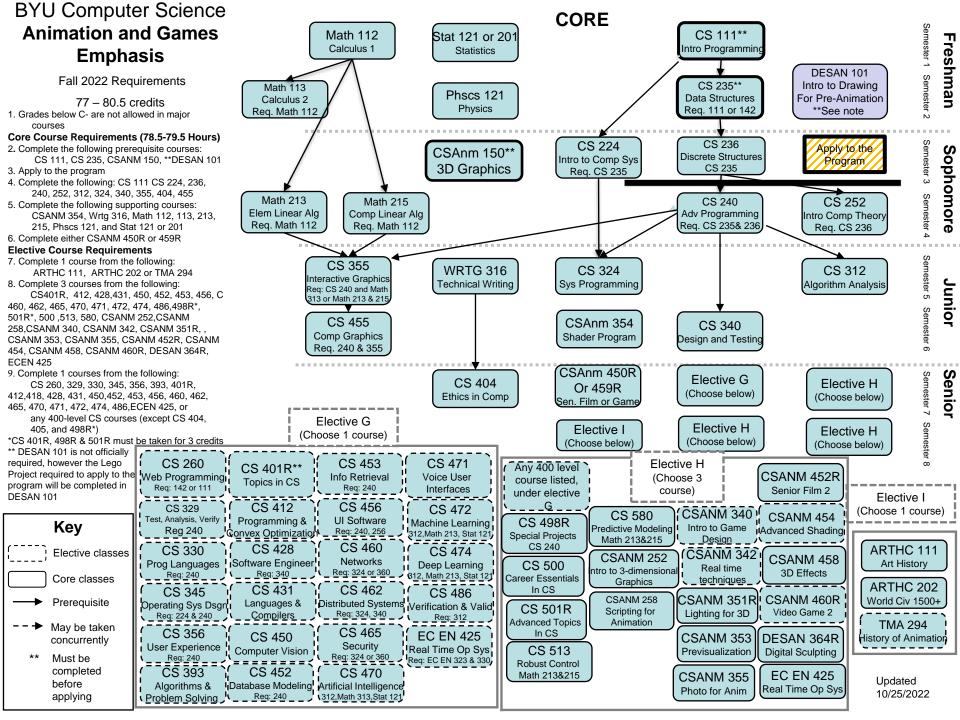
Computer Science Department

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



ii handshake

BYU's own job board. Employers who want to hire BYU graduates or offer internships to current students post job openings to this website and students apply. Just like LinkedIn, employers can view student profiles and students can network as they apply for jobs and internships

Login to handshake.byu.edu >>> BYU Net ID

*you do not need to create an account, just sign in with you BYU information



HOW TO MAKE THE MOST OUT OF HANDSHAKE:

1. COMPLETE YOUR PROFILE

- Upload your resume and it will auto-fill in your profile
- Completed profiles tailor your Handshake experience
- Information from your transcript is already uploaded
- Fill in the Summary/Bio section
- Fill in yor past jobs and experiences, including all the bullet points you use on your resume
- Add a professional headshot and background photo

Remember: every word in your profile will be searchable by students and employers

employers are

5X MORE LIKELY

to view a profile that has at least one job/skill/organization

2. APPLY FOR JOBS

- Search for job titles, employers, or skills
- Apply for interesting jobs that meet your skill set

3. RESEARCH COMPANIES

- Under the "Jobs" Tab there is an "Employers" Tab
- Search for keywords or locations to find companies that are the right fit for you
- Plan to attend their info sessions on BYU Campus, connect with them at Career Fairs, or set up informational interviews to learn more

Remember: when looking at companies or jobs, Handshake will tell you what other BYU students have worked there. Use this resource to network and discover more information!

4. EXPLORE FELLOW STUDENTS

- "Students" tab
- Search for fellow BYU students to view their profiles and job positions (Facebook stalking... "networking")

5. ATTEND EVENTS

- The "Events" tab will be your key to attending info sessions, interviews, and Career Fairs
- The "Calendar" tab under "Events" will show you what events are coming soon
- Make sure to save events you are interested in or RSVP so you do not forget to attend
- Spread the word to your friends on social media

6. DOWNLOAD HANDSHAKE APP

- Search: "Handshake" not "Handshake Career Services"
- Input your BYU e-mail address: netID@byu.edu (it will forward emails to the e-mail you have on file with BYU)
- Handshake will send you a link via e-mail to enable your account in the app
- Navigate the app to perform all the functions of the website that have been previously mentioned

7. VISIT THE CAREER STUDIO

- Freshen up your resume, cover letter, or LinkedIn
- Receive networking help
- Practice interviewing with a mock interview
- Meet with a full-time Career Counselor in your field

8. GET A JOB, RING THE BELL

 Once you're hired, stop by the Career Studio to ring our Victory Bell and get a picture for the Victory Board



BYU CAREER SERVICES careers.byu.edu 1134 WSC (801) 422-3000

Possible Careers with a Computer Science major

(Not a comprehensive list)

Animation Tool Developer

Applications developer

Artificial intelligence engineer

Bioinformatics developer

Business intelligence analyst

Cloud-related jobs – devops engineer, cloud engineer, virtualization engineer, web serviced engineer

Computational and information scientist

Computer programmer

Computer systems analyst

Cyber Security Analyst

Data scientist

Database manager

Embedded Systems Programmer

Multimedia programmer

Network Engineer

Network Architect

Professor*

Research Scientist

Robotics software engineer

Security Engineer

Security Architect

Software Test Engineer

Software Development Manager

Software Engineer

Systems Engineer

UI/UX Engineer

UI/UX Researcher

Video game developer and designer

Web designer

Web programmer

More information is available at the Counseling and Career Center and from CareerOneStop: http://www.careeronestop.org/

^{*}Usually requires a graduate degree