

Welcome to the

# Computer Science Major Software Engineering Emphasis

in the College of Computational, Mathematical, and Physical Sciences



## College Advisement Center

Website: <https://science.byu.edu/advisement>  
Email: [science.math.advisement@byu.edu](mailto:science.math.advisement@byu.edu)  
Phone: 801-422-2674  
Office: N-181 ESC

## Computer Science Department

Website: [cs.byu.edu](http://cs.byu.edu)  
Email: [csoffice@cs.byu.edu](mailto:csoffice@cs.byu.edu)  
Phone: 801-422-3027  
Office: 3361 TMCB

## Undergraduate Department Advisor – Lynnette Nelson

Email: [lnelson@cs.byu.edu](mailto:lnelson@cs.byu.edu)  
Phone: 801-422-9439  
Office: 2250 TMCB

## Internship Coordinator – Dennis Ng (International Students only)

Email: [ng@compsci.byu.edu](mailto:ng@compsci.byu.edu)  
Phone: 801-422-2835  
Office: 3322 TMCB

## University Career Services – Lane Muranaka

Website: [careers.byu.edu](http://careers.byu.edu) (Handshake--see flyer in packet)  
Email: [lane\\_muranaka@byu.edu](mailto:lane_muranaka@byu.edu)  
Phone: 801-422-3000 (schedule appointment)  
Office: WVB 2152A

## Clubs

**ACM** – Kimball Germane, [cs.byu.acm@gmail.com](mailto:cs.byu.acm@gmail.com)

**Developers Club** – Kimball Germane, [dev-assoc@byu.edu](mailto:dev-assoc@byu.edu), visit [dev.byu.edu](http://dev.byu.edu) to join and learn more

**BYU Competitive Programming Club**—Ryan Farrell, [farrell@cs.byu.edu](mailto:farrell@cs.byu.edu), visit [cpc.byu.edu](http://cpc.byu.edu) to join and learn more

**Dev-G (Game development)** – Seth Holladay, [dev-g-assoc@byu.edu](mailto:dev-g-assoc@byu.edu)

**Linux Users Group** – Casey Deccio, [linux-assoc@byu.edu](mailto:linux-assoc@byu.edu)

**Women in Computer Science** – Angela Jones – [angela@cs.byu.edu](mailto:angela@cs.byu.edu), [wics@cs.byu.edu](mailto:wics@cs.byu.edu)

Learning outcomes can be found here: <https://learningoutcomes.byu.edu/Courses/program-courses/693225/Computer+Science+BS+Software+Engineering/1323>

# Things to Know

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## Resources for Graduation Planning

- Flow Charts and Major Academic Plans (MAPs) can be found here: <https://science.byu.edu/advisement/explore-majors-and-minors>.
- 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.
- Consider meeting with a faculty advisor in your department. Contact info is found on the first page of this packet.

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## 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-104 BNSN, 801-422-6261, <https://chem.byu.edu/department/faculty/>
  - Computer Science: 3361 TMCB, 801-422-3027, [csoffice@cs.byu.edu](mailto:csoffice@cs.byu.edu)
  - Geological Sciences: S-389 ESC, 801-422-3918, [geology@byu.edu](mailto:geology@byu.edu)
  - Mathematics: 275 TMCB, 801-422-2061, [office@mathematics.byu.edu](mailto:office@mathematics.byu.edu)
  - Mathematics Education: 167 TMCB, 801-422-1735, [office@mathed.byu.edu](mailto:office@mathed.byu.edu)
  - Physics and Astronomy: N-283 ESC, 801-422-4361, [physics\\_office@byu.edu](mailto:physics_office@byu.edu)
  - Statistics: 2152 WVB, 801-422-4505, [statsec@stat.byu.edu](mailto:statsec@stat.byu.edu)

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## Prepare Early for a Career

- Check out Careers & Experiential Learning in 1134 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](http://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).
- Consider taking StDev 317 (Career Strategies) your junior year.
- Consider taking either Chem 502, CS 502, Geol 502, Math 502, PHSCS 502, or STAT 502 (1-credit Networking Class). Class is held for 1 hour each week.

# BS in Computer Science: Software Engineering (693225) MAP Sheet

Physical and Mathematical Sciences, Computer Science

For students entering the degree program during the 2024-2025 curricular year

University Core and Graduation Requirements				Suggested Sequence of Courses			
<b>University Core Requirements:</b>				<b>FRESHMAN YEAR</b>		<b>JUNIOR YEAR</b>	
<b>Requirements</b>	<b># Classes</b>	<b>Hours</b>	<b>Classes</b>	<u>1st Semester</u>		<u>5th Semester</u>	
<b>Religion Cornerstones</b>				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 340	3.00
Jesus Christ and the Everlasting Gospel	1	2.00	REL A 250	MATH 112	4.00	CS 204	1.00
Foundations of the Restoration	1	2.00	REL C 225	UNIV 101	2.00	GE Arts, Letters, Sciences	3.00
The Eternal Family	1	2.00	REL C 200	American Heritage or First Year Writing	3.00	GE Religion	2.00
<b>BYU Foundations for Student Success</b>				Religion Cornerstone Class	2.00	CS 452	3.00
Foundations for Student Success	1	2.00	UNIV 101	<b>Total Hours:</b>	<b>14.50</b>	<b>Total Hours:</b>	<b>15.00</b>
<b>The Individual and Society</b>				<u>2nd Semester</u>		<u>6th Semester</u>	
American Heritage	1 to 2	3.00-6.00	from approved list	CS 235	3.00	CS 324	3.00
Global and Cultural Awareness	1	3.00	from approved list	CS 202	1.00	GE Religion	2.00
<b>Skills</b>				CS 260	3.00	CS 329	3.00
First Year Writing	1	3.00	from approved list	American Heritage or First Year Writing	3.00	GE Arts, Letters, Sciences	3.00
Advanced Written and Oral Communications	1	3.00	WRTG 316*	MATH 290, 113, or STAT 220	3.00-4.00	WRTG 316	3.00
Quantitative Reasoning	1	4.00	MATH 112*	Religion Cornerstone Course	2.00	<b>Total Hours:</b>	<b>14.00</b>
Languages of Learning (Math of Language)	1	4.00	MATH 112*	<b>Total Hours:</b>	<b>15.00-16.00</b>	<b>SENIOR YEAR</b>	
<b>Arts, Letters and Sciences (Complete 6 of 7)</b>				<b>SOPHMORE YEAR</b>		<u>7th Semester</u>	
Civilization 1	1	3.00	from approved list	<u>3rd Semester</u>		CS Requirement 5 Elective	3.00
Civilization 2	1	3.00	from approved list	CS 203	1.00	CS Requirement 5 Elective	3.00
Arts	1	3.00	from approved list	CS 224	3.00	PHSCS 121	3.00
Letters	1	3.00	from approved list	CS 236	3.00	University Elective	3.00
Biological Science	1	3.00	from approved list	CS 291	0.50	GE Arts, Letters, Sciences	3.00
Physical Science	2	3.00	from approved list	Global and Cultural Awareness	3.00	<b>Total Hours:</b>	<b>15.00</b>
Social Science	1	3.00	from approved list	GE Arts, Letters, Sciences	3.00	<u>8th Semester</u>	
<b>Core Enrichment: Electives</b>				Religion Cornerstone Course	2.00	CS 480	3.00
Religion Electives	3 to 4	6.00	from approved list	<b>Total Hours:</b>	<b>15.50</b>	CS 481	3.00
Open Electives	Variable	Variable	personal choice	<u>4th Semester</u>		CS Requirement 6 Elective	3.00
<b>Graduation Requirements:</b>				CS 240	4.00	CS 404	2.00
Minimum residence hours required		30.00		STAT 121 or 201	3.00	GE Religion	2.00
Minimum hours needed to graduate		120.00		MATH 213	2.00	GE Arts, Letters, Sciences	3.00
				MATH 215	1.00	<b>Total Hours:</b>	<b>16.00</b>
				Religion Cornerstone Class	2.00		
				GE Arts, Letters, Sciences	3.00		
				<b>Total Hours:</b>	<b>15.00</b>		

\*These classes fill both university core and program requirements

## Program Requirements

*Grades below C- are not allowed in major courses.*

### Requirement 1 — Complete 19 Courses

*Core courses:*

C S 111 - Intro to Computer Science 3.0  
C S 191 - Exploring CS 0.5  
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 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 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 329 - Test, Analysis, & Verification 3.0  
C S 340 - Software Design 3.0  
C S 404 - Ethics & Computers in Society 2.0  
C S 452 - Database Modeling Concepts 3.0  
C S 480 - Soft Eng Capstone 1 3.0  
C S 481 - Soft Eng Capstone 2 3.0

### Requirement 2 — Complete 4 Courses

MATH 112 - Calculus 14.0  
MATH 213 - Elementary Linear Algebra 2.0  
MATH 215 - Computational Linear Algebra 1.0  
PHSCS 121 - Intro to Newtonian Mechanics 3.0  
WR TG 316 - Technical Communication 3.0

### Requirement 3 — Complete 1 of 2 Courses

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 2 of 11 Courses

C S 256 - Introduction to HCI 3.0  
C S 270 - Intro to Machine Learning 3.0  
C S 330 - Concepts of Programng Lang 3.0  
C S 345 - Operating Systems Design 3.0  
C S 356 - Advanced Techniques in HCI 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 473 - Advanced Machine Learning 3.0  
C S 486 - Verification and Validation 3.0

### Requirement 6 — Complete 3 hours

*Courses will not double count between Requirement 5 and Requirement 6.*

C S 252 - Intro to Computational Theory 3.0  
C S 256 - Introduction to HCI 3.0  
C S 270 - Intro to Machine Learning 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 405 - Software Business 3.0  
C S 412 - Linear Prog/Conv Optimization 3.0  
C S 450 - Computer Vision 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 493R - Computing Competitions - *You may take up to 3.0 credit hours 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*  
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 - *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 574 - Transformers for NLP 3.0  
C S 575 - Intro to Network Science 3.0  
C S 580 - Theory of Predictive Modeling 3.0  
EC EN 424 - Computer Systems 4.0  
EC EN 425 - Real-Time Operating Systems 4.0  
IT&C 567 - Cybersecurity & Pen Test 3.0  
MATH 411 - Numerical Methods 3.0  
MATH 431 - Probability Theory 3.0  
MATH 485 - Mathematical Cryptography 3.0

*Note: If C S 493R, C S 498R, or C S 501R is chosen, it must be taken for 3 credit hours.*

### Requirement 7 — Obtain confirmation from your advisement center that you have completed the following:

Complete Senior Exit interview with the C S department during last semester or term.

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

## 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

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



## 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](https://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 your 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

### 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](mailto: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



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!

# 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

\*Usually requires a graduate degree

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