



BS in COMPUTER ENGINEERING (393540) MAP Sheet
 Department of Electrical and Computer Engineering
 For students entering the degree program during the 2002–2003 curricular year.

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

GENERAL EDUCATION AND UNIVERSITY REQUIREMENTS (52.5–57.0 hours)				MAJOR REQUIREMENTS (92.5–93.5.0 total hours)			
GENERAL EDUCATION REQUIREMENTS (38.5–43.0 hours)				Complete the following preprofessional program as soon as possible upon entering BYU:			
Requirements				a. Complete the following (or approved equivalent courses):			
Languages of Learning	# Classes	Hours	Classes	ECEn 191	Freshman Seminar	0.5	
Precollege Math	0–1	0–3.0	Math 97 or equivalent	Math 112*	Calculus 1	4.0	
1st Year Writing	1	3.0	Engl 115	Math 113	Calculus 2	4.0	
Advanced Writing	1	3.0	Engl 312* or 316*	Phscs 121*	Princ of Physics	3.0	
Advanced Languages/Math/Music	1	4.0	Math 112*	Phscs 220*	Princ of Physics	3.0	
Liberal Arts Core				Note: Although ECEn 191 is not required before application for professional status, take it as early as possible.			
Biological Science	1	3.0	Biol 100	b. Complete at least one course (other than Engl 312 or 316) from those listed below.			
Physical Science	2	6–7.0	Chem 105* or 111*, Phscs 121*	c. During the semester of completing the above, obtain an application from the college advisement center and apply for professional status. (Contact the department or the college advisement center for additional details.)			
American Heritage	1	3.0	AHtg 100	Complete the following supporting courses (either as a preprofessional or a professional student):			
Civilization	2	6.0	from approved list	CS 142	Intro Comp Prog	3.0	
Wellness	1–3	1.5–2.0	from approved list	CS 235	Foundations of Comp Science 1	4.0	
Arts and Sciences Electives				CS 236	Foundations of Comp Science 2	4.0	
Arts and Letters	1	3.0	from approved list	CS 240	Adv. Programming Concept	3.0	
Natural Sciences	1	3.0	Phscs 220*	ECEn 124	Intro to Computing Systems	3.0	
Social & Behavioral Sciences	1	3.0	from approved list	Math 334	Ordinary Differential Equations	3.0	
				Math 343	Elementary Linear Algebra	3.0	
				Stat 441	Statistical History (or equivalent)	3.0	
				And complete one course from the following:			
				Chem 105*	Gen College Chem	4.0	
				Chem 111*	Principles of Chemistry	3.0	
				And complete one course from the following:			
				Engl 312*	Persuasive Writing	3.0	
				Engl 316*	Technical Writing	3.0	
				Complete the following professional requirements:			
				ECEn 212	Circuits		
				ECEn 224	Fundamentals of Digital Systems	5.0	
				ECEn 313	Electronic Circuit Design 1	3.0	
				ECEn 317	Electronics Lab 1	4.0	
				ECEn 380	Signal and Systems	1.0	
				ECEn 490	Team Design Project	4.0	
				Complete at least 22 hours from the following advanced program and technical electives:			
				a. Complete at least two hours from the following courses:			
				ECEn 360	Transmission Lines and Intro Fields		
				ECEn 361	Transmission Lines & Intro Fields Lab	4.0	
				(continued in next column) 1.0			
				ECEn 362	Transmission Lines		
				Note: Students will not receive credit for both ECEn 361 and ECEn 362.			
				b. Complete at least three of the following courses:			
				ECEn 324	Computer Architecture		
				ECEn 425	Real-Time & Embedded Sys	4.0	
				ECEn 427	Computer Input/Output Devices	4.0	
				ECEn 451	Intro to Digital VLSI Circuits	4.0	
				c. Complete at least two of the following courses:			
				CS 345	Operating System Design		
				CS 428	Software Systems Design	3.0	
				CS 431	Algorithmic Lang & Compilers	3.0	
				CS 452	Database Modeling Concepts	3.0	
				CS 455	Computer Graphics	3.0	
				CS 456	Intro User Interface Software	3.0	
				CS 460	Computer Comm & Networking	3.0	
				CS 462	Large Scale Distributed Sys Design	3.0	
				CS 470	Intro to Artificial Intelligence	3.0	
				CS 472	Intro to Neural Networks	3.0	
				d. Complete remaining course hours from the following:			
				(1) Additional courses listed in a, b, and c above.			
				(2) 500-level computer science courses.			
				(3) 300-level and higher electrical and computer engineering courses except 301R.			
				(4) Other engineering, mathematics, and physics courses as specified or approved by the Electrical and Computer Engineering Department.			
				Suggested courses are:			
				ChEn 381	Integrated Circuit Processing	3.0	
				ECEn 443	Electronic Circuit Design 2	4.0	
				ECEn 445	Intro to Mixed Signal VLSI	4.0	
				ECEn 450	Intro to Semiconductor Devices	3.0	
				ECEn 452	Experiments in IC development	1.0	
				ECEn 455	VLSI Testing	1.0	
				ECEn 460	Applied Electromagnetic Theory	3.0	
				ECEn 461	Electromagnetics Laboratory	1.0	
				ECEn 483	Feedback Control of Systems	4.0	
				ECEn 485	Intro to Digital Communication	4.0	
				ECEn 487	Intro to Discrete Signal Processing	4.0	
				Math 214	Calculus of Several Variables	3.0	
				Math 332	Intro to Complex Analysis	3.0	
				Math 347	Intro to Partial Differential Eqns	3.0	
				Math 411	Numerical methods	3.0	
				Phscs 281	Principles of Solid State Physics	3.0	
				Note: Contact the Electrical and Computer Engineering Department for current information about added and/or deleted courses, as well as information about when courses are offered.			
UNIVERSITY REQUIREMENTS							
Religion Courses (14.0 hours)							
Book of Mormon	2	4.0	RelA 121 and 122				
New Testament	1	2.0	RelA 211 or 212				
Doctrine & Covenants	1	2.0	RelC 324 or 325				
Elective courses	2–6	6.0					
Graduation Requirements							
Residence hours		30.0					
Minimum hours needed to graduate		120.0					
FOR GE QUESTIONS CONTACT THE ADVISEMENT CENTER							
FOR MAJOR QUESTIONS SEE YOUR DEPARTMENT ADVISOR							
*THESE CLASSES FILL BOTH GE AND MAJOR REQUIREMENTS (16–17.0 hours overlap)							

Suggested Sequence of Courses*:**FRESHMAN YEAR**

1st Semester	
CS 142 (FWSpSu)	3.0
ECEn 191 (FW)	0.5
Math 112 (FWSpSu)	4.0
HEPE 129 (FWSpSu)	2.0
RelA 121 (FWSpSu)	2.0
1 st Year Writing	3.0
Total Hours	14.5

2nd Semester

Math 113 (FWSpSu)	4.0
Phscs 121 (FWSpSu)	3.0
ECEn 124 (FWSu)	3.0
RelA 122 (FWSpSu)	2.0
AHtg 100 (FWSpSu)	3.0
Total Hours	15.0

Spring Term

Phscs 220 (FWSpSu)	3.0
Arts and Letters elective	3.0
Total Hours	6.0

SOPHOMORE YEAR

3rd Semester	
ECEn 212 (FWSp)	5.0
CS 235 (FWSp)	4.0
Math 343 (FWSpSu)	3.0
RelA 211 or 212 (FWSpSu)	2.0
Total Hours	14.0

4th Semester

ECEn 224 (FW)	3.0
ECEn 313 (FWSp)	4.0
ECEn 317 (FWSp)	1.0
CS 236 (FWSu)	4.0
Religion elective	2.0
Total Hours	14.0

Spring Term

Chem 105 (FWSpSu)	4.0
Math 334 (FWSpSu)	3.0
Total Hours	7.0

*For other options please go to the department web site: www.ee.byu.edu and review the undergraduate information.

Your faculty advisor can assist you in choosing electives to meet your total hour requirement.

Note: Students are encouraged to complete an average of 16 credit hours each semester or 32 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.

JUNIOR YEAR

5th Semester	
CS 240 (FWSu)	3.0
ECEn 380 (FWSp)	5.0
ECEn 4xx - Adv Core Elective	4.0
Civilization 1	3.0
Total Hours	15.0

6th Semester

ECEn 4xx - adv. Core elective	4.0
ECEn 362	2.0
Stat 441 (FW)	3.0
Civilization 2	3.0
RelC 324 or 325	2.0
Total Hours	14.0

SENIOR YEAR

7th Semester	
ECEn 4xx - adv. Core elective	4.0
CS Elective	3.0
Engl 312 or 316	3.0
Biological Science	3.0
Religion elective	2.0
Total Hours	15.0

8th Semester

CS elective	3.0
Technical elective	4.0
ECEn 490	4.0
Social and Behavioral Science elective	3.0
Religion elective	2.0
Total Hours	16.0

THE DISCIPLINE:

Electrical and computer engineers study phenomena, devices, and systems for information processing, communication, and systems control. These studies, grounded primarily in physics and mathematics, have enabled engineers to develop the innovative new technologies for information acquisition, processing, storage, and communication that have made possible our contemporary Age of Information.

Examples of systems developed by electrical and computer engineers include radio, television, radar, satellite communication systems, cellular telephones, laptop computers, fiber-optic communications devices, global and local computer networks, robotic systems, control systems, fax machines, medical image processing, computer modems, lasers, pagers, computer vision, programmable calculators, VLSI chips, computer-aided design tools, and medical instruments.

Although it is the goal of engineering to produce useful objects, electrical and computer engineers typically play a limited role in construction, assembly, or mass production. Instead, they focus on design, analysis, and the development of the underlying theory and knowledge applied in the design process.

CO-OP EXPERIENCES:

Optional co-op experiences with engineering firms throughout the USA are available. These experiences typically extend over one semester plus the spring/summer terms, for a total of eight months.

PROFESSIONAL AND HONOR SOCIETIES:

The student chapter of the Institute of Electrical and Electronic Engineers, Eta Kappa NU, is the electrical and computer engineering honor society, and Tau Beta Pi is the honor society for all engineering fields.

CAREERS:

Electrical and computer engineers are among the most actively recruited students graduating from a four-year program. Baccalaureate engineers typically start their careers as members of project teams with one or more of the following responsibilities: designing digital, analog, or opto-electronic circuits; creating or testing application specific software; testing components or systems; or providing technical support for sales. Later on, many engineers find themselves pursuing managerial careers, starting their own companies, or even managing entrepreneurial funds. Top graduates are also well received by medical schools, law schools, and professional and management programs.

The BS curriculum for both the electrical engineering and computer engineering degrees is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc. (ABET).

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