



BS in COMPUTER ENGINEERING (393540) MAP Sheet
 Department of Electrical and Computer Engineering
 For students entering the degree program during the 2001–2002 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 # Classes Hours Classes				a. Complete the following courses or approved equivalent courses:					
Languages of Learning				ECEn 191 Freshman Seminar 0.5 Math 112* Calculus 1 4.0 Math 113 Calculus 2 4.0 Phscs 121* Princ of Physics 3.0 Phscs 220* Princ of Physics 3.0					
Precollege Math 0–1 0–3.0 Math 97 or equivalent 1st Year Writing 1 3.0 Engl 115 Advanced Writing 1 3.0 Engl 312* or 316* Advanced Languages/Math/Music 1 4.0 Math 112*	Note: ECEn 191 is recommended to be taken as early as possible but is not required prior to application for professional status.			Complete at least 24 hours from the following advanced program and technical electives:					
Liberal Arts Core				a. Complete at least three of the following courses:					
Biological Science 1 3.0 Biol 100 Physical Science 2 6–7.0 Chem 105* or 111*, Phscs 121* American Heritage 1 3.0 AHtg 100 Civilization 2 6.0 from approved list Wellness 1–3 1.5–2.0 from approved list	b. Complete at least one course (other than Engl 312 or 316) from those listed below.			ECEn 324 Computer Architecture 4.0 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					
Arts and Sciences Electives				c. During the semester of completing the above, obtain an application from the college advisement center and apply for professional status. (Contact the department office or the college advisement center for additional details.)					
Arts and Letters 1 3.0 from approved list Natural Sciences 1 3.0 Phscs 220* Social & Behavioral Sciences 1 3.0 from approved list	Complete the following supporting courses (either as a preprofessional or a professional student):			b. Complete at least two of the following courses:					
UNIVERSITY REQUIREMENTS				CS 142 Intro Comp Prog 3.0 CS 235 Foundations of Comp Science 1 4.0 CS 236 Foundations of Comp Science 2 4.0 CS 240 Adv. Programming Concept 4.0 ECEn 124 Intro to Computing Systems 3.0 Math 334 Ordinary Differential Equations 3.0 Math 343 Elementary Linear Algebra 3.0 Stat 421 Prob & Dist Theory 3.0			CS 345 Operating System Design 3.0 CS 428 Software Systems Design 3.0 CS 431 Algorithmic Lang & Compilers 3.0 CS 452 Database Modeling Concepts 3.0 CS 453 Database Implementation 3.0 CS 455 Computer Graphics 3.0 CS 456 Intro User Interface Software 3.0 CS 460 Computer Comm & Networking 3.0 CS 470 Intro to Artificial Intelligence 3.0		
Religion Courses (14.0 hours)				And complete one course from the following:					
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	And complete one course from the following:			c. Complete remaining course hours from the following:					
Graduation Requirements				Chem 105* Gen College Chem 4.0 Chem 111* Principles of Chemistry 3.0					
Residence hours 30.0 Minimum hours needed to graduate 120.0	Complete the following professional requirements:			(1) Additional courses listed in a and b 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.					
FOR GE QUESTIONS CONTACT THE ADVISEMENT CENTER				Suggested courses are:					
FOR MAJOR QUESTIONS SEE YOUR FACULTY ADVISOR				ChEn 381 Integrated Circuit Processing 3.0 ECEn 360 Transmission Lines and Fields 4.0 ECEn 361 Electromagnetics Laboratory 1.0 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					
*THESE CLASSES FILL BOTH GE AND MAJOR REQUIREMENTS (16–17.0 hours overlap)				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.					

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2001–2002

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

<u>5th Semester</u>	
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
CS elective	3.0
Stat 421 (FW)	3.0
Civilization 2	3.0
RelC 324 or 325	2.0
Total Hours	15.0

SENIOR YEAR

<u>7th Semester</u>	
ECEn 4xx - adv. Core elective	4.0
Technical 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	3.0
ECEn 490	4.0
Social and Behavioral Science elective	3.0
Religion elective	2.0
Total Hours	15.0

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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