



BS in COMPUTER ENGINEERING (393540) MAP Sheet

Department of Electrical and Computer Engineering

For students entering the degree program during the 2003 2004 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 (88.5 89.5 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):			
Requirements	# Classes	Hours	Classes	ECEn 191 Freshman Seminar	0.5	ECEn 362 Transmission Lines	2.0
Languages of Learning				Note: Students will not receive credit for both ECEn 361 and ECEn 362.			
Precollege Math	0 1	0 3.0	Math 97 or equivalent	Math 112* Calculus 1	4.0	b. Complete at least three of the following courses:	
1st Year Writing	1	3.0	Engl 115	Math 113 Calculus 2	4.0	ECEn 324 Computer Architecture	4.0
Advanced Writing	1	3.0	Engl 312* or 316*	Phscs 121* Princ of Physics	3.0	ECEn 425 Real-Time & Embedded Sys	4.0
Advanced Language s/Math/Music	1	4.0	Math 112*	Phscs 220* Princ of Physics	3.0	ECEn 427 Computer Input/Output Devices	4.0
Liberal Arts Core				Note: ECEn 191 is not required before application for professional status.			
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	67.0	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	CS 345 Operating System Design	3.0
Wellness	1 3	1.52.0	from approved list	CS 235 Foundations of Comp Science 1	3.0	CS 428 Software Systems Design	3.0
Arts and Sciences Electives				CS 236 Foundations of Comp Science 2	3.0	CS 431 Algorithmic Lang & Compilers	3.0
Arts and Letters	1	3.0	from approved list	CS 240 Adv. Programming Concept	3.0	CS 452 Database Modeling Concepts	3.0
Natural Sciences	1	3.0	Phscs 220*	ECEn 124 Intro to Computing Systems	3.0	CS 455 Computer Graphics	3.0
Social & Behavioral Sciences	1	3.0	from approved list	Math 334 Ordinary Differential Equations	3.0	CS 456 Intro User Interface Software	3.0
UNIVERSITY REQUIREMENTS				Math 343 Elementary Linear Algebra	3.0	CS 460 Computer Comm & Networking	3.0
Religion Courses (14.0 hours)				Stat 441 Statistical History (or equivalent)	3.0	CS 462 Large Scale Distributed Sys Design	3.0
Book of Mormon	2	4.0	RelA 121 and 122	And complete one course from the following:			
New Testament	1	2.0	RelA 211 or 212	Chem 105* Gen College Chem	4.0	CS 465 Computer Security	3.0
Doctrine & Co venants	1	2.0	RelC 324 or 325	Chem 111* Principles of Chemistry	3.0	CS 470 Intro to Artificial Intelligence	3.0
Elective courses	2 6	6.0		And complete one course from the following:			
Graduation Requirements				Engl 312* Persuasive Writing	3.0	CS 472 Intro to Neural Networks	3.0
Residence hours		30.0		Engl 316* Technical Writing	3.0	d. Complete remaining course hours from the following:	
Minimum hours needed to graduate		120.0		Complete the following professional requirements:			
FOR GE QUESTIONS CONTACT THE ADVISEMENT CENTER				ECEn 212 Circuits	3.0	(1) Additional courses listed in a, b, and c above.	
FOR MAJOR QUESTIONS SEE YOUR DEPARTMENT ADVISOR				ECEn 224 Fundamentals of Digital Systems	4.0	(2) 500-level computer science courses.	
*THESE CLASSES FLL BOTH GE AND MAJOR REQUIREMENTS (16 17.0 hours overlap)				ECEn 313 Electronic Circuit Design 1	1.0	(3) 300-level and higher electrical and computer engineering courses except 301.	
				ECEn 317 Electronics Lab 1	5.0	(4) Other engineering, mathematics, and physics courses as specified or approved by the Electrical and Computer Engineering Department.	
				ECEn 380 Signal and Systems	4.0	Suggested courses are:	
				ECEn 490 Team Design Project		ChEn 381 Integrated Circuit Processing	4.0
				Complete at least 24 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	1.0	ECEn 443 Electronic Circuit Design 2	4.0
				ECEn 361 Transmission Lines & Intro Fields Lab		ECEn 445 Intro to Mixed Signal VLSI	3.0
				(continued in next column)			
				ECEn 450 Intro to Semiconductor Devices	1.0	ECEn 452 Experiments in IC development	1.0
				ECEn 455 VLSI Testing	3.0	ECEn 455 VLSI Testing	3.0
				ECEn 460 Applied Electromagnetic Theory	1.0	ECEn 461 Electromagnetics Laboratory	4.0
				ECEn 461 Electromagnetics Laboratory	4.0	ECEn 483 Feedback Control of Systems	4.0
				ECEn 483 Feedback Control of Systems	4.0	ECEn 485 Intro to Digital Communication	4.0
				ECEn 485 Intro to Digital Communication	4.0	ECEn 487 Intro to Discrete Signal Processing	3.0
				ECEn 487 Intro to Discrete Signal Processing	3.0	Math 214 Calculus of Several Variables	3.0
				Math 214 Calculus of Several Variables	3.0	Math 332 Intro to Complex Analysis	3.0
				Math 332 Intro to Complex Analysis	3.0	Math 347 Intro to Partial Differential Eqns	3.0
				Math 347 Intro to Partial Differential Eqns	3.0	Math 411 Numerical methods	3.0
				Math 411 Numerical methods	3.0	Phscs 222 Modern Physics	3.0
				Phscs 222 Modern Physics	3.0	Phscs 281 Principles of Solid State Physics	
				Phscs 281 Principles of Solid State Physics		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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2003 2004

Suggested Sequence of Courses*:

FRESHMAN YEAR

<u>1st Semester</u>	
CS 142 (FWSpSu)	3.0
ECEn 191 (FW)	0.5
1 st Year Writing	3.0
HEPE 129 (FW SpSu)	2.0
Math 112 (FWSpSu)	4.0
ReIA 121 (FWSpSu)	2.0
Total Hours	14.5

2nd Semester

AHTg 100 (FWSpSu)	3.0
ECEn 124 (FWSu)	3.0
Math 113 (FWSpSu)	4.0
Phscs 121 (FWSpSu)	3.0
ReIA 122 (FWSpSu)	2.0

Total Hours 15.0

Spring Term

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

SOPHOMORE YEAR

<u>3rd Semester</u>	
CS 235 (FWSp)	3.0
ECEn 212 (FWSp)	5.0
Math 343 (FWSpSu)	3.0
ReIA 211 or 212 (FWSpSu)	2.0
Total Hours	13.0

4th Semester

CS 236 (FWSu)	3.0
ECEn 224 (FW)	3.0
ECEn 313 (FWSp)	4.0
ECEn 317 (FWSp)	1.0
ECEn 362 (FW)	2.0
Religion elective	2.0
Total Hours	15.0

Spring Term

Chem 105 (FW SpSu)	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.

JUNIOR YEAR

<u>5th Semester</u>	
Civilization 1	3.0
CS 240 (FWSu)	3.0
ECEn 380 (FWSp)	5.0
ECEn 4xx - Adv Core Elective	4.0

Total Hours 15.0

6th Semester

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

Total Hours 15.0

SENIOR YEAR

<u>7th Semester</u>	
Engl 312 or 316	3.0
Biological Science	3.0
ECEn 4xx - adv. Core elective	4.0
Religion elective	2.0
Technical elective	3.0

Total Hours 15.0

8th Semester

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

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).

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.

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