



BS in COMPUTER ENGINEERING (393540)

Department of Electrical and Computer Engineering

For students entering the degree program during the 1999–2000 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 (53.5–57.0 hours)				MAJOR REQUIREMENTS (93–97.0 total hours)						
GENERAL EDUCATION REQUIREMENTS (39.5–43.0 hours)				Complete the following preprofessional courses or approved equivalent courses:						
<u>Requirements</u>	<u># Classes</u>	<u>Hours</u>	<u>Classes</u>	ECEn 191	Freshman Seminar	0.5	ECEn 325	Intro Comp Design w/Appli	5.0	
Languages of Learning				Math 112*	Calculus 1	4.0	ECEn 492A	Design Project Proposal	0.5	
Precollege Math	1	0–3.0	Math 97 or equivalent	Math 113	Calculus 2	4.0	ECEn 492B	Senior Design Project	1.0	
1st Year Writing	1	3.0	Engl 115	Phscs 121*	Princ of Physics	3.0	ECEn 492C	Design Project Report	0.5	
Advanced Writing	1	3.0	Engl 316*	Phscs 122*	Princ of Physics	3.0	CS 235	Foundations Computer Sci 1	4.0	
Advanced Languages/Math/Music	1	4.0	Math 112*				CS 240	Advanced Programming Concepts	3.0	
Liberal Arts Core				Note: ECEn 191 is recommended to be taken as early as possible but is not required prior to application for professional status.						
Biological Science	1	3.0	Biol 100	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.)						
Physical Science	2	7.0	Chem 105*, Phscs 121*	Complete the following supporting courses:						
American Heritage	1	3.0	A Hgt 100	a. Complete the following:						
Civilization	2	6.0	from approved list	Chem 105*	Gen College Chem	4.0	CS 345	Operating Systems Design	3.0	
Wellness	1–3	1.5–2.0	from approved list	CS 142	Intro Comp Prog	3.0	CS 428	Software Systems Design	3.0	
Arts and Sciences Electives				ECEn 220	Digital State Machines	4.0	CS 431	Algorithmic Lang & Compilers	3.0	
Arts and Letters	1	3.0	from approved list	ECEn 491	Senior Seminar	0.5	CS 452	Database Modeling Concepts	3.0	
Natural Sciences	1	3.0	Phscs 122*	ECEn 491	Senior Seminar	0.5	CS 453	Database Implement	3.0	
Social & Behavioral Sciences	1	3.0	from approved list	Engl 316*	Technical Writing	3.0	CS 455	Computer Graphics	3.0	
				Phscs 281	Prin of Solid St	3.0	CS 456	Intro User Interface Software	3.0	
				Stat 421	Prob & Dist Theory	3.0	CS 460	Computer Comm & Networking	3.0	
							CS 470	Intro Artificial Intelligence	3.0	
UNIVERSITY REQUIREMENTS				b. Complete one of the following sequences:						
Religion Courses (14.0 hours)				1) For the standard math sequence, complete the following:						
Book of Mormon	2	4.0	RelA 121 and 122	Math 212	Adv Engr Math	3.0	And complete one course from the following:			
New Testament	1	2.0	RelA 211 or 212	Math 213	Adv Engr Math	3.0	MeEn 321	Thermodynamics	3.0	
Doctrine & Covenants	1	2.0	RelC 324 or 325	2) For the optional math sequence, complete the following:				MeEn 401	Intro Thermal Engineering	3.0
Elective courses	2–6	6.0		Math 214	Calculus Svr Variables	3.0	And complete two courses from the following:			
Graduation Requirements				Math 334	Ord Diff Equat	3.0	CS 345	Operating Systems Design	3.0	
Upper division hours		40.0	300+ level courses at BYU	Math 343	Elem Linear Algebra	3.0	CS 428	Software Systems Design	3.0	
Residence hours		30.0		Note: The optional math sequence is preferred by most students and highly recommended for honors students and those seeking advanced degrees or a minor in mathematics.				CS 431	Algorithmic Lang & Compilers	3.0
Minimum hours needed to graduate		120.0		Complete the following professional courses:				CS 452	Database Modeling Concepts	3.0
				ECEn 311	Circuits Lab	1.0	CS 453	Database Implement	3.0	
				ECEn 312	Circuit Analysis	4.0	CS 455	Computer Graphics	3.0	
				ECEn 313	Electron Ckt Des	4.0	CS 456	Intro User Interface Software	3.0	
				ECEn 317	Electronics Lab 1	1.0	CS 460	Computer Comm & Networking	3.0	
				<i>(Continued in next column)</i>				CS 470	Intro Artificial Intelligence	3.0
								And complete one course from the following:		
								ECEn 360	Transmission Lines & Intro Fields	4.0
								ECEn 380	Signals & Systems	5.0
								ECEn 450	Intro Semiconductor Devices	3.0
								Select courses from the list below so that the total credit hours from this section and the previous section total at least 9 (8 hours with a math minor):		
								(1) Selected 400- and 500-level CS courses		
								(2) Any 300-level EC En course except 301R.		
								(3) Any 400- or 500-level EC En course.		
								(4) Or complete 6 hours from the following:		
								Math 332	Intro Complex Analysis	
								Math 347	Intro Partial Differential	3.0
								Math 411	Numerical Methods	3.0
								Phscs 471	Principles of Optics	3.0
								Phscs 561	Fund of Acoustics	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.		

FOR GE QUESTIONS CONTACT THE ADVISEMENT CENTER — FOR MAJOR QUESTIONS SEE YOUR FACULTY ADVISOR

*THESE CLASSES FILL BOTH GE AND MAJOR REQUIREMENTS (17 hours overlap)

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1999–2000

Suggested Sequence of Courses:

FRESHMAN YEAR

<u>1st Semester</u>	
CS 142 (FWSpSu)	3.0
ECEn 191 (FW)	0.5
Math 112 (FWSpSu)	4.0
Phscs 121 (FWSpSu)	3.0
RelA 121 (FWSpSu)	2.0
1 st Year Writing	3.0
OR AHtg 100	(3.0)
General Education courses	
Total Hours	17.0

<u>2nd Semester</u>	
ECEn 220 (FWSu)	4.0
Math 113 (FWSpSu)	4.0
Phscs 122 (FWSpSu)	3.0
RelA 122 (FWSpSu)	2.0
1 st Year Writing	3.0
OR AHtg 100	(3.0)
General Education courses	1.0
Total Hours	17.0

SOPHOMORE YEAR

<u>3rd Semester</u>	
ECEn 311 (FWSp)	1.0
ECEn 312 (FWSp)	4.0
CS 235 (FWSpSu)	4.0
Math 212 (FWSp)	3.0
RelA 211 or 212 (FWSpSu)	2.0
General Education courses	3.0
Total Hours	17.0

<u>4th Semester</u>	
ECEn 313 (FWSp)	4.0
ECEn 317 (FWSpSu)	1.0
ECEn 325	5.0
Math 213 (FWSu)	3.0
RelC 324 or 325 (FWSpSu)	2.0
General Education courses	2.0
Total Hours	17.0

JUNIOR YEAR

<u>5th Semester</u>	
CS 240 (FW*)	3.0
ECEn 425 (F) or 428 (W)	4.0
ECEn 451 (FW)	4.0
Religion elective	2.0
General Education courses	3.0
Total Hours	16.0

<u>6th Semester</u>	
CS 345 (FW*)	3.0
Phscs 281 (F)	3.0
ECEn 380 (FWSp)	5.0
or ECEn 360 (FW)	(4.0)
or ECEn 450 (W)	(3.0)
ECEn 427 (F)	3.0
Religion elective	2.0
General Education courses	1.0
Total Hours	15–17.0

*alternates between Spring and Summer terms

SENIOR YEAR

<u>7th Semester</u>	
CS 400-level elective	3.0
MeEn 321 or 401	3.0
ECEn 491 (F)	0.5
ECEn 492A (FW)	0.5
Technical elective	3.0
Engl 316 (FWSpSu)	3.0
Religion elective	2.0
General Education courses	1.0
Total Hours	16.0

<u>8th Semester</u>	
Stat 421 (FW)	3.0
Chem 105 (FWSpSu)	3.0
ECEn 492B (FWSp)	1.0
ECEn 492C (FWSp)	0.5
Technical electives	3.0
General Education courses	4.0
Total Hours	14.5

THE DISCIPLINE:

Electrical and computer engineers study phenomena, devices, and systems for information processing, communication, and systems control. These studies, which are 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.

While 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 in 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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