



BS in ELECTRICAL ENGINEERING (393550)

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 (94–97.0 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 361	Lines & Fields Lab	1.0		
Languages of Learning				Math 112*	Calculus 1	4.0	ECEn 380	Signals & Systems	5.0		
Precollege Math	1	0–3.0	Math 97 or equivalent	Math 113	Calculus 2	4.0	ECEn 492A	Design Project Prop	0.5		
1st Year Writing	1	3.0	Engl 115	Phscs 121*	Princ of Physics	3.0	ECEn 492B	Senior Design Project	1.0		
Advanced Writing	1	3.0	Engl 316*	Phscs 122*	Princ of Physics	3.0	ECEn 492C	Design Project Rep	0.5		
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.				And complete one course from the following:			
Liberal Arts Core				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.)				MeEn 321	Thermodynamics	3.0	
Biological Science	1	3.0	Biol 100	Complete the following supporting courses:				MeEn 401	Intro Thermal Engr	3.0	
Physical Science	2	7.0	Chem 105*, Phscs 121*	Chem 105*	Gen College Chem	4.0	Complete the following advanced program and technical electives (24 hours for the standard mathematics sequence, 23 hours for the optional mathematics sequence):				
American Heritage	1	3.0	A Hgt 100	ECEn 220	Digital State Machines	4.0	a. Complete 4 courses selected from at least 3 of the following groups:				
Civilization	2	6.0	from approved list	ECEn 491	Senior Seminar	0.5	Group 1:				
Wellness	1–3	1.5–2.0	from approved list	Engl 316*	Technical Writing	3.0	ECEn 443	Electron Ckt Des	4.0		
Arts and Sciences Electives				Phscs 281	Prin of Solid St	3.0	ECEn 445	Intro to Mixed Signal VLSI	4.0		
Arts and Letters	1	3.0	from approved list	Stat 421	Prob & Dist Th	3.0	ECEn 450	Intro Semicond Dev	3.0		
Natural Sciences	1	3.0	Phscs 122*	And select one course from the following:				Group 2:			
Social & Behavioral Sciences	1	3.0	from approved list	CS 130	Scientific Computing—C	2.0	ECEn 460	Electromagnetics	3.0		
				CS 142	Intro Comp Prog	3.0	Group 3:				
UNIVERSITY REQUIREMENTS				And complete one of the following sequences:				ECEn 483	Feedback Control of Dyn Systems	4.0	
Religion Courses (14.0 hours)				1) For the standard math sequence, complete the following:				ECEn 485	Intro to Digital Comm Theory	4.0	
Book of Mormon	2	4.0	RelA 121 and 122	Math 212	Adv Engr Math	3.0	ECEn 487	Intro to Discrete-Time Signl Proc	4.0		
New Testament	1	2.0	RelA 211 or 212	Math 213	Adv Engr Math	3.0	Group 4:				
Doctrine & Covenants	1	2.0	RelC 324 or 325	2) For the optional math sequence, complete the following:				ECEn 425	Real-Time EMB Systems	4.0	
Elective courses	2–6	6.0		Math 214	Calculus Svr Variables	3.0	ECEn 427	Computer Input/Output Devices	4.0		
Graduation Requirements				Math 334	Ord Diff Equat	3.0	ECEn 428	Computer Architecture	4.0		
Upper division hours		40.0	300+ level courses at BYU	Math 343	Elem Linear Al	3.0	ECEn 451	Intro Dig VLSI Circuits	4.0		
Residence hours		30.0		Note: The optional math sequence is preferable for most students and highly recommended for honors students and those seeking advanced degrees or a minor in mathematics.				b. Complete remaining course hours selected from the following:			
Minimum hours needed to graduate		120.0		Complete the following professional courses:				(1) additional 400-level courses from list (a) above.			
				ECEn 311	Circuits Lab	1.0	(2) Any ECEn 500-level course.				
				ECEn 312	Circuit Analysis	4.0	(3) 300-level and higher courses in mechanical engineering, civil and environmental engineering, mathematics, physics, and/or computer science as specified and posted in the ECEn department office.				
				ECEn 313	Electron Ckt Des	4.0	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.				
				ECEn 317	Electronics Lab 1	1.0					
				ECEn 325	Int Comp Des & App	5.0					
				ECEn 360	Lines and Fields	4.0					
				<i>(Continued in next column)</i>							

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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	1.5
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
ECEn 325 (FWSu)	5.0
Math 212 (FWSp)	3.0
RelA 211 or 212 (FWSpSu)	2.0
General Education courses	2.5
Total Hours	17.5

<u>4th Semester</u>	
Chem 105 (FWSpSu)	4.0
ECEn 313 (FWSp)	4.0
ECEn 317 (FWSp)	1.0
Math 213 (FWSu)	3.0
RelC 324 or 325 (FWSpSu)	2.0
General Education courses	2.0
Total Hours	16.0

JUNIOR YEAR

<u>5th Semester</u>	
ECEn 380 (FWSp)	5.0
ECEn 360 (FW)	4.0
ECEn 361 (FW)	1.0
Phscs 281 (F)	3.0
Religion elective	2.0
General Education courses	1.0
Total Hours	16.0

<u>6th Semester</u>	
ECEn 400-level electives (FWSu)	7.0
MeEn 321 (FWSp)	3.0
Religion elective	2.0
General Education courses	4.0
Total Hours	16.0

SENIOR YEAR

<u>7th Semester</u>	
ECEn 491 (F)	0.5
ECEn 492A (FW)	0.5
ECEn 400-level electives (FWSu)	7.0
Engl 316 (FWSpSu)	3.0
Technical elective	3.0
Religion elective	2.0
Total Hours	16.0

<u>8th Semester</u>	
ECEn 492B (FWSp)	1.0
ECEn 492C (FWSp)	0.5
Stat 421 (FW)	3.0
Technical electives	7.0
General Education courses	4.5
Total Hours	16.0

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).

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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.