



BS in ELECTRICAL ENGINEERING (393550) MAP Sheet
 Department of Electrical and Computer Engineering
 For students entering the degree program during the 2009–2010 curricular year.

UNIVERSITY CORE AND GRADUATION REQUIREMENTS				PROGRAM REQUIREMENTS (91-92 total hours)		
UNIVERSITY CORE REQUIREMENTS (48.5 hours minimum)				Complete the following prerequisite courses:		
<u>Requirements</u>	<u>#Classes</u>	<u>Hours</u>	<u>Classes</u>	Math 112*	Calculus 1	4.0
				Math 113*	Calculus 2	4.0
				Phscs 121*	Principles of Physics 1	3.0
				Phscs 220*	Principles of Physics 3	3.0
Doctrinal Foundation				Complete the following:		
Book of Mormon	2	4.0	Rel A 121/H and 122/H	EC En 124	Introduction to Computing Systems	3.0
New Testament	1	2.0	Rel A 211/H or 212/H	EC En 191	New Student Seminar	0.5
Doctrine and Covenants	1	2.0	Rel C 324/H or 325/H	EC En 212	Circuit Analysis and Laboratory	5.0
The Individual and Society				EC En 224	Fundamentals of Digital Systems	3.0
Citizenship				EC En 313	Electronic Circuit Design 1	5.0
American Heritage	1–2	3–6.0	from approved list	EC En 360	Electromagnetic Fields & Waves	3.0
Global & Cultural Awareness	1	3.0	from approved list†	EC En 362	Transmission Line Fundamentals	2.0
Skills				EC En 370	Probability Theory	3.0
Effective Communication				EC En 380	Signals and Systems	5.0
First-Year Writing	1	3.0	from approved list	EC En 391	Junior Seminar	0.5
Adv Written & Oral Communication	1	3.0	Engl 312* or 316*	EC En 490	Team Design Project	4.0
Quantitative Reasoning	0–1	0–4.0	Math 112* or 113*	Complete at least 19 hours from the following advanced technical program and technical electives:		
Languages of Learning (Math or Language)	1	4.0	Math 112* or 113*	a. Complete 16 hours from the following:		
Arts, Letters, and Sciences				EC En 320	Digital System Design	3.0
Civilization 1 and 2	2	6.0	from approved list†	EC En 324	Computer Systems	3.0
Arts	1	3.0	from approved list†	EC En 425	Real-Time Operating Systems	4.0
Letters	1	3.0	from approved list†	EC En 427	Embedded Systems	4.0
Scientific Principles & Reasoning				EC En 443	Communication and Power Circuits	4.0
Biological Science	1–2	3–6.0	from approved list	EC En 445	Introduction to Mixed-Signal VLSI	4.0
Physical Science	2	6–7.0	Chem 105* or 111*, and Phscs 121* or 220*	EC En 450	Introduction to Semiconductor Devices	3.0
Social Science	1	3.0	from approved list†	EC En 451	Introduction to Digital VLSI Circuits	4.0
Core Enrichment: Electives				EC En 452	Experiments in Integrated Circuit Dev	1.0
Religion Electives	3–4	6.0	from approved list†	EC En 462	Electromagnetic Radiation & Prop	2.0
Open Electives	Variable	Variable	personal choice	EC En 464	Wireless Communication Circuits	2.0
GRADUATION REQUIREMENTS:				EC En 466	Introduction to Optical Engineering	2.0
Minimum residence hours required		30.0		EC En 483	Design of Control Systems	4.0
Minimum hours needed to graduate		120.0		EC En 485	Intro to Digital Communication Theory	4.0
				EC En 487	Intro to Discrete-Time Signal Processing	4.0
				b. Complete remaining course hours selected from the following:		
				1. Additional courses listed in item a above, or other 400-level electrical and computer engineering courses.		
				2. 500-level electrical and computer engineering courses.		
				3. Other engineering, mathematics, physics, or computer science courses as specified or approved by the Electrical and Computer Engineering Department. Preapproved courses include C S 236, 240, and Phscs 222.		
				Complete the following supporting courses:		
				Chem 105*	General College Chemistry	4.0
				Or		
				Chem 111*	Principles of Chemistry	3.0
				C S 142	Introduction to Computer Programming	3.0
				C S 235	Data Structures and Algorithms	3.0
				Engl 312*	Persuasive Writing	3.0
				Or		
				Engl 316*	Technical Communication	3.0
				Math 313	Elementary Linear Algebra	3.0
				Math 314	Calculus of Several Variables	3.0
				Math 334	Ordinary Differential Equations	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.		

FOR GE QUESTIONS CONTACT THE ADVISEMENT CENTER ◆ FOR PROGRAM QUESTIONS SEE YOUR DEPARTMENT ADVISOR
 *THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (13–14.0 hours overlap)

†REDUCTION OF TOTAL CREDITS IS RECOMMENDED by satisfying the Global & Cultural Awareness requirement using either 1) Rel C 351 or a combination of Rel C 355 and 356 (which also double counts to satisfy part of the religion elective requirements) or 2) a combination of a foreign-language mission with the 300- or 400-level foreign language culminating course (which many students take anyway) or 3) Eng T 231 (which also double counts to satisfy the social science requirement).

‡REDUCTION OF TOTAL CREDITS IS RECOMMENDED by choosing a Civilization 2 course that also double counts for the Arts requirement (if a separate Letters course is taken) or the Letters requirement (if a separate Arts course is taken) --- see the University Core list for specifics.

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2009–2020

Suggested Sequence of Courses*:

FRESHMAN YEAR

<u>1st Semester</u>	
EC En 191 (FW)	0.5
C S 142 (FWSpSu)	3.0
Chem 105 (FWSpSu)	4.0
1 st Year Writing	3.0
Math 112 (FWSpSu)	4.0
Rel A 121 (FWSpSu)	2.0
Total Hours	16.5

2nd Semester

EC En 124 (FWSp)	3.0
Math 113 (FWSpSu)	4.0
Phscs 121 (FWSpSu)	3.0
American Heritage requirement	3.0
Rel A 122 (FWSpSu)	2.0
Total Hours	15.0

SOPHOMORE YEAR

<u>3rd Semester</u>	
C S 235 (FWSpSu)	3.0
EC En 224 (FWSu)	3.0
Math 313 (FWSpSu)	3.0
Phscs 220 (FWSp)	3.0
University core requirement	3.0
Rel A 211 or 212 (FWSpSu)	2.0
Total Hours	17.0

4th Semester

EC En 212 (FWSp)	5.0
EC En 370 (FW)	3.0
Math 334 (FWSpSu)	3.0
University core requirement	3.0
Religion elective	2.0
Total Hours	16.0

JUNIOR YEAR

<u>5th Semester</u>	
EC En 313 (FWSp)	5.0
EC En 391 (F)	0.5
Engr 312 or 316	3.0
Math 314 (FWSpSu)	3.0
Phscs 281 (F)	3.0
Rel A 324 or 325	2.0
Total Hours	16.5

6th Semester

EC En 360 (FW)	3.0
EC En 362 (FWSp)	2.0
EC En 380 (FWSp)	5.0
University core requirement	3.0
Religion elective	2.0
Total Hours	15.0

SENIOR YEAR

<u>7th Semester</u>	
Technical elective	4.0
Technical elective	4.0
Technical elective	4.0
University core requirement	3.0
Total Hours	15.0

8th Semester

EC En 490 (FW)	4.0
Technical elective	3.0
Technical elective	4.0
University core requirement	3.0
Religion elective	2.0
Total Hours	16.0

*Actual course sequences should be adapted to individual needs. For example, students with AP credits in Math, Physics, or Computer Science will already have credit for some initial courses. Many students find it beneficial to attend one or more spring or summer terms. On average, students take about nine semesters to graduate in this program.

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 and INTERNSHIP EXPERIENCES:

Optional co-op and internship experiences with engineering firms throughout the USA are available. These experiences may 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 is the professional organization; 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).

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.

Electrical and Computer Engineering Department
459 Clyde Building
Brigham Young University Provo, UT 84602
Telephone: (801) 422-4012