



BS in ELECTRICAL ENGINEERING (393550) MAP Sheet
 Department of Electrical and Computer Engineering
 For students entering the degree program during the 2010–2011 curricular year.

UNIVERSITY CORE AND GRADUATION REQUIREMENTS				PROGRAM REQUIREMENTS (91-92 total hours)		
UNIVERSITY CORE REQUIREMENTS				Complete the following prerequisite courses: 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 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 Complete the following: EC En 124 Introduction to Computing Systems 3.0 EC En 191 New Student Seminar 0.5 EC En 212 Circuit Analysis and Laboratory 5.0 EC En 224 Fundamentals of Digital Systems 3.0 EC En 313 Electronic Circuit Design 1 5.0 EC En 360 Electromagnetic Fields & Waves 3.0 EC En 362 Transmission Line Fundamentals 2.0 EC En 370 Probability Theory 3.0 EC En 380 Signals and Systems 4.0 EC En 391 Junior Seminar 0.5 EC En 490 Team Design Project 4.0		
Requirements #Classes Hours Classes Doctrinal Foundation Book of Mormon 2 4.0 Rel A 121/H and 122/H New Testament 1 2.0 Rel A 211/H or 212/H Doctrine and Covenants 1 2.0 Rel C 324/H or 325/H The Individual and Society Citizenship American Heritage 1–2 3–6.0 from approved list Global & Cultural Awareness 1 3.0 from approved list† Skills Effective Communication First-Year Writing 1 3.0 from approved list Adv Written & Oral Communication 1 3.0 Engl 312* or 316* Quantitative Reasoning 0–1 0–4.0 Math 112* or 113* Languages of Learning (Math or Language) 1 4.0 Math 112* or 113* Arts, Letters, and Sciences Civilization 1 and 2 2 6.0 from approved list‡ Arts 1 3.0 from approved list‡ Letters 1 3.0 from approved list‡ Scientific Principles & Reasoning Biological Science 1–2 3–6.0 from approved list Physical Science 2 6–7.0 Chem 105* or 111*, and Phscs 121* or 220* Social Science 1 3.0 from approved list‡ Core Enrichment: Electives Religion Electives 3–4 6.0 from approved list‡ Open Electives Variable Variable personal choice				Complete at least 20 hours from the following advanced technical program and technical electives: a. Complete 17 hours from the following: EC En 320 Digital System Design 3.0 EC En 324 Computer Systems 3.0 EC En 425 Real-Time Operating Systems 4.0 EC En 427 Embedded Systems 4.0 EC En 443 Communication and Power Circuits 4.0 EC En 445 Introduction to Mixed-Signal VLSI 4.0 EC En 450 Introduction to Semiconductor Devices 3.0 EC En 451 Introduction to Digital VLSI Circuits 4.0 EC En 452 Experiments in Integrated Circuit Dev 1.0 EC En 462 Electromagnetic Radiation & Prop 2.0 EC En 464 Wireless Communication Circuits 2.0 EC En 466 Introduction to Optical Engineering 2.0 EC En 483 Design of Control Systems 4.0 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. 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. 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.		
GRADUATION REQUIREMENTS:						
Minimum residence hours required				30.0		
Minimum hours needed to graduate				120.0		

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.

BS in ELECTRICAL ENGINEERING (393550)

2010–2011

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 or A Htg	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
First-Year Writing or A Htg	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 (FW)	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)	4.0
University core requirement	3.0
Religion elective	2.0
Total Hours	14.0

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	4.0
Technical elective	4.0
University core requirement	3.0
Religion elective	2.0
Total Hours	17.0

*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