



BS in COMPUTER ENGINEERING (393540) MAP Sheet
 Department of Electrical and Computer Engineering
 For students entering the degree program during the 2008–2009 curricular year.

UNIVERSITY CORE AND GRADUATION REQUIREMENTS				PROGRAM REQUIREMENTS (92–93 total hours)			
UNIVERSITY CORE REQUIREMENTS (48.5 hours minimum)				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 courses: 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 320 Digital System Design 3.0 EC En 324 Computer Systems 3.0 EC En 370 Probability Theory 3.0 EC En 380 Signals and Systems 5.0 EC En 391 Junior Seminar 0.5 EC En 490 Team Design Project 4.0 Complete at least 19 hours from the following advanced technical program and technical electives: a. Complete at least two of the following courses: EC En 425 Real-Time Operating Systems 4.0 EC En 427 Embedded Systems 4.0 EC En 451 Introduction to Digital VLSI Circuits 4.0 b. Complete one of the following options: Either EC En 362 Transmission Line Fundamentals for High-Speed Digital Systems 2.0 Or EC En 360 Transmission Lines & Introductory Fields 4.0 EC En 361 Transmission Lines & Introductory Fields Lab 1.0 c. 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.			
Requirements	#Classes	Hours	Classes	2. Any of the following: C S 345 Operating Systems Design 3.0 C S 428 Software Engineering 3.0 C S 431 Algorithmic Languages and Compilers 3.0 C S 452 Database Modeling Concepts 3.0 C S 455 Computer Graphics 3.0 C S 456 Introduction to User Interface Software 3.0 C S 460 Computer Communications & Networking 3.0 C S 462 Large-Scale Distributed System Design 3.0 C S 465 Computer Security 3.0 C S 470 Intro do Artificial Intelligence 3.0 C S 478 Intro to Neural Networks and Machine Learning 3.0 C S 486 Verification and Validation 3.0 3. 500-level computer science courses 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 C S 236 Discrete Structures 3.0 C S 240 Advanced Programming Concepts 3.0 Engl 312 Persuasive Writing 3.0 Or Engl 316 Technical Communication 3.0 Math 334 Ordinary Differential Equations 3.0 Math 343 Elementary Linear Algebra 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.			
Doctrinal Foundation				(continued in next column)			
Book of Mormon	2	4.0	RelA 121/H and 122/H				
New Testament	1	2.0	RelA 211/H or 212/H				
Doctrine and Covenants	1	2.0	RelC 324/H or 325/H				
The Individual and Society							
Wellness	1or3	1.5–2.0	from approved list				
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				
GRADUATION REQUIREMENTS:							
Minimum residence hours required		30.0					
Minimum hours needed to graduate		120.0					

FOR UNIVERSITY CORE QUESTIONS CONTACT THE ADVISEMENT CENTER ■ FOR PROGRAM QUESTIONS SEE YOUR DEPARTMENT ADVISOR
 *THESE COURSES 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).

‡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 COMPUTER ENGINEERING (393540) 2008–2009

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
Wellness requirement	2.0
Rel A 122 (FWSpSu)	2.0
Total Hours	17.0

SOPHOMORE YEAR

3rd Semester

C S 235 (FWSpSu)	3.0
EC En 224 (FWSu)	3.0
Math 343 (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

C S 236 (FWSpSu)	3.0
EC En 212 (FWSp)	5.0
EC En 324 (FWSp)	3.0
University core requirement	3.0
Religion elective	2.0
Total Hours	16.0

JUNIOR YEAR

5th Semester

C S 240 (FWSu)	3.0
EC En 313 (FWSp)	5.0
EC En 391 (F)	0.5
Engl 312 or 316	3.0
Math 334 (FWSpSu)	3.0
Rel A 324 or 325	2.0
Total Hours	16.5

6th Semester

EC En 320 (FW)	3.0
EC En 362 (FW)	2.0
EC En 380 (FWSp)	5.0
Technical elective	3.0
University core requirement	3.0
Total Hours	16.0

SENIOR YEAR

7th Semester

EC En 370 (FW)	3.0
Technical elective	4.0
Technical elective	4.0
University core requirement	3.0
Religion elective	2.0
Total Hours	16.0

8th Semester

EC En 490 (FW)	4.0
Technical elective	3.0
Technical elective	3.0
University core requirement	3.0
Religion elective	2.0
Total Hours	15.0

*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 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).

The student advisor in the department 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.

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