



BS in COMPUTER ENGINEERING (393540) MAP Sheet
 Department of Electrical and Computer Engineering
 For students entering the degree program during the 2005–2006 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.

UNIVERSITY CORE AND GRADUATION REQUIREMENTS				MAJOR REQUIREMENTS (92.5–93.5 total hours)	
UNIVERSITY CORE REQUIREMENTS (48.5 hours minimum)				Complete the following preprofessional program as soon as possible upon entering BYU:	
Requirements				a. Complete the following (or approved equivalent courses):	
	<u>#Classes</u>	<u>Hours</u>	<u>Classes</u>		
Doctrinal Foundation				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	
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				b. Complete at least one preprofessional course (other than Engl 312 or 316) from the list of supporting courses below.	
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				c. During the semester of completing the above, obtain an application from the college advisement center and apply for professional status. (Contact the department or the college advisement center [264 CB] for additional details.)	
Effective Communication				Complete the following supporting courses (either as a preprofessional or a professional student):	
First-Year Writing	1	3.0	from approved list	C S 142 Introduction to Computer Programming	3.0
Adv Written & Oral Communication	1	3.0	Engl 312* or 316*	C S 235 Data Structures and Algorithms	3.0
Quantitative Reasoning	1	4.0	Math 112* or 113*	C S 236 Discrete Structures	3.0
Languages of Learning (Math or Language)	1	4.0	Math 112* or 113*	C S 240 Advanced Programming Concepts	3.0
Arts, Letters, and Sciences				EC En 124 Introduction to Computing Systems	3.0
Civilization 1 and 2	2	6.0	from approved list‡	EC En 224 Fundamentals of Digital Systems	3.0
Arts	1	3.0	from approved list‡	Math 334 Ordinary Differential Equations	3.0
Letters	1	3.0	from approved list‡	Math 343 Elementary Linear Algebra	3.0
Scientific Principles & Reasoning				And complete one course from the following:	
Biological Science	1–2	3–6.0	from approved list	Chem 105* General College Chemistry	4.0
Physical Science	2	6–7.0	Chem 105* or 111* and Phscs 121* or 220*	Chem 111* Principles of Chemistry	3.0
Social Science	1	3.0	from approved list	And complete one course from the following:	
Core Enrichment: Electives				Engl 312* Persuasive Writing	3.0
Religion Electives	3–4	6.0	from approved list‡	Engl 316* Technical Writing	3.0
Open Electives	Variable	Variable	personal choice	Complete the following professional requirements:	
GRADUATION REQUIREMENTS:				EC En 212 Circuit Analysis and Laboratory	5.0
Minimum residence hours required		30.0		EC En 313 Electronic Circuit Design 1	4.0
Minimum hours needed to graduate		120.0		EC En 317 Electronics Laboratory 1	1.0
				EC En 320 Digital System Design	3.0
				EC En 324 Computer System Architecture	3.0
				EC En 370 Probability Theory	3.0
				EC En 380 Signals and Systems	5.0
				EC En 490 Team Design Project	4.0
				EC En 491 Senior Seminar	0.5
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UNIVERSITY CORE AND GRADUATION REQUIREMENTS				MAJOR REQUIREMENTS (92.5–93.5 total hours)	

FOR UNIVERSITY CORE QUESTIONS CONTACT THE ADVISEMENT CENTER ■ FOR MAJOR QUESTIONS SEE YOUR DEPARTMENT ADVISOR

*THESE COURSES FILL BOTH UNIVERSITY CORE AND MAJOR 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.

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EC En 462	Electromagnetic Radiation & Propagation	2.0
EC En 464	Wireless Communication Circuits	2.0
EC En 466	Introduction to Optical Engineering	2.0
EC En 483	Feedback Control of Systems	4.0
EC En 485	Intro to Digital Communication	4.0
EC En 487	Intro to Discrete Signal Processing	4.0
Math 214	Calculus of Several Variables	3.0
Math 332	Introduction to Complex Analysis	3.0
Math 347	Introduction to Partial Differential Equations	3.0
Math 411	Numerical Methods	3.0
Phscs 222	Modern Physics	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.

Suggested Sequence of Courses*:

FRESHMAN YEAR

1st Semester	
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	16.0

2nd Semester

EC En 124 (FWSpSu)	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 (FWSp)	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 240 (FWSu)	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 236 (FWSu)	3.0
EC En 313 (FWSp)	4.0
EC En 317 (FWSp)	1.0
Engl 312 or 315	3.0
Math 334 (FWSpSu)	3.0
Rel A 324 or 325	2.0
Total Hours	16.0

6th Semester

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

SENIOR YEAR

7th Semester

EC En 370 (FW)	3.0
EC En 491 (F)	0.5
Technical elective	4.0
Technical elective	4.0
University core requirement	3.0
Religion elective	2.0
Total Hours	16.5

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 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.

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