



BS in ELECTRICAL ENGINEERING (393550) MAP Sheet
 Department of Electrical and Computer Engineering
 For students entering the degree program during the 2007–2008 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 (90.5-91.5 total hours)	
UNIVERSITY CORE REQUIREMENTS (48.5 hours minimum)				Complete the following preprofessional program as soon as possible upon entering BYU:	
Requirements	#Classes	Hours	Classes	a. Complete the following:	Complete at least 19 hours from the following advanced program and technical electives:
Doctrinal Foundation				a. Complete the following:	a. Complete at least 4 courses from the following :
Book of Mormon	2	4.0	Rel A 121/H and 122/H	Math 112* Calculus 1 4.0	Ch En 381 Intro to Semiconductor Processing 3.0
New Testament	1	2.0	Rel A 211/H or 212/H	Math 113* Calculus 2 4.0	EC En 320 Digital System Design 3.0
Doctrine and Covenants	1	2.0	Rel C 324/H or 325/H	Phscs 121* Principles of Physics 1 3.0	EC En 324 Computer System Architecture 3.0
The Individual and Society				Phscs 220* Principles of Physics 3 3.0	EC En 425 Real-Time Operating Systems 4.0
Wellness	1 or 3	1.5–2.0	from approved list	b. 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 [264 CB] for additional details.)	EC En 427 Embedded Systems 4.0
Citizenship				Complete the following supporting courses (either as a preprofessional or a professional student):	EC En 443 Communication and Power Circuits 4.0
American Heritage	1–2	3–6.0	from approved list	C S 142 Introduction to Computer Programming 3.0	EC En 445 Introduction to Mixed-Signal VLSI 4.0
Global & Cultural Awareness	1	3.0	from approved list†	C S 235 Data Structures and Algorithms 3.0	EC En 450 Introduction to Semiconductor Devices 3.0
Skills				EC En 124 Introduction to Computing Systems 3.0	EC En 451 Introduction to Digital VLSI Circuits 4.0
Effective Communication				EC En 224 Fundamentals of Digital Systems 3.0	EC En 464 Wireless Communications Circuits 2.0
First-Year Writing	1	3.0	from approved list	Math 214 Calculus of Several Variables 3.0	EC En 466 Introduction to Optical Engineering 2.0
Adv Written & Oral Communication	1	3.0	Engl 312* or 316*	Math 334 Ordinary Differential Equations 3.0	EC En 483 Feedback Control of Dynamic Systems 4.0
Quantitative Reasoning	0–1	0–4.0	Math 112* or 113*	Math 343 Elementary Linear Algebra 3.0	EC En 485 Intro to Digital Communication Theory 4.0
Languages of Learning (Math or Language)	1	4.0	Math 112* or 113*	Phscs 281 Principles of Solid State Physics 3.0	EC En 487 Intro to Discrete-Time Signal Processing 4.0
Arts, Letters, and Sciences				And complete one course from the following:	b. Complete remaining course hours selected from the following:
Civilization 1 and 2	2	6.0	from approved list‡	Chem 105* General College Chemistry 4.0	(1) additional courses listed in a above, or other 400-level EC En courses.
Arts	1	3.0	from approved list‡	Chem 111* Principles of Chemistry 3.0	(2) 500-level EC En courses.
Letters	1	3.0	from approved list‡	And complete one course from the following:	(3) Other engineering, mathematics, physics, or computer science courses as specified or approved by the EC En department.
Scientific Principles & Reasoning				Engl 312* Persuasive Writing 3.0	Some suggested courses are:
Biological Science	1–2	3–6.0	from approved list	Engl 316* Technical Writing 3.0	C S 236 Discrete Structures 3.0
Physical Science	2	6–7.0	Chem 105* or 111*, and Phscs 121* or 220*	Complete the following professional requirements:	C S 240 Advanced Programming Concepts 3.0
Social Science	1	3.0	from approved list	EC En 212 Circuit Analysis and Laboratory 5.0	EC En 452 Experiments-Integrated Circuit Dvlpmnt 1.0
Core Enrichment: Electives				EC En 313 Electronic Circuit Design 1 4.0	EC En 455 VLSI Testing 1.0
Religion Electives	3–4	6.0	from approved list‡	EC En 317 Electronics Laboratory 1 1.0	Math 315 Theory of Analysis 3.0
Open Electives	Variable	Variable	personal choice	EC En 360 Transmission Lines & Introductory Fields 4.0	Math 316 Theory of Analysis 3.0
				EC En 361 Transmission Lines & Introd. Fields Lab 1.0	Math 332 Introduction to Complex Analysis 3.0
GRADUATION REQUIREMENTS:				EC En 370 Probability Theory 3.0	Math 347 Intro. to Partial Differential Equations 3.0
Minimum residence hours required		30.0		EC En 380 Signals & Systems 5.0	Math 350 Combinatorics 3.0
Minimum hours needed to graduate		120.0		EC En 391 Junior Seminar 0.5	Math 355 Graph Theory 3.0
				EC En 490 Team Design Project 4.0	Math 371 Abstract Algebra 3.0
					Math 372 Abstract Algebra 3.0
					Math 387 Number Theory 3.0
					Math 411 Numerical Methods 3.0
					Math 480 Mathematical Models 3.0
					Math 500-level courses
					Phscs 222 Modern Physics 3.0
					Phscs 400-level courses
					Phscs 500-level courses
					Other courses as approved by the department

FOR GE QUESTIONS CONTACT THE ADVISEMENT CENTER ♦ FOR MAJOR QUESTIONS SEE YOUR DEPARTMENT ADVISOR

*THESE CLASSES 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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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 (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

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

5th Semester

EC En 313 (FWSp)	4.0
EC En 317 (FWSp)	1.0
EC En 391 (F)	0.5
Engl 312 or 315	3.0
Math 214 (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)	4.0
EC En 361 (FW)	1.0
EC En 380 (FWSp)	5.0
Technical elective	4.0
Religion elective	2.0
Total Hours	16.0

SENIOR YEAR

7th Semester

Technical elective	4.0
Technical elective	4.0
University core requirement	3.0
University core requirement	3.0
Total Hours	14.0

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 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).

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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