



**BS in ELECTRICAL ENGINEERING (393550) MAP Sheet**  
 Department of Electrical and Computer Engineering  
 For students entering the degree program during the 2004–2005 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)											
<b>UNIVERSITY CORE REQUIREMENTS</b> (48.5 hours minimum)				<b>Complete the following preprofessional program as soon as possible upon entering BYU:</b>				<b>Complete at least 19 hours from the following advanced program and technical electives:</b>							
<b>Requirements</b>				<b>a. Complete the following (or approved equivalent courses):</b>				<b>a. Complete at least 4 courses from the following:</b>							
<b>Doctrinal Foundation</b>	<b>#Classes</b>	<b>Hours</b>	<b>Classes</b>	Math 112*	Calculus 1	4.0	ChEn 381	Intro to Semiconductor Processing	3.0	ECEn 320	Digital System Design	3.0	ECEn 324	Computer Architecture	3.0
Book of Mormon	2	4.0	RelA 121/H and 122/H	Math 113	Calculus 2	4.0	ECEn 425	Real-Time Operating Systems	4.0	ECEn 427	Embedded Systems	4.0	ECEn 443	Electron Ckt Des	4.0
New Testament	1	2.0	RelA 211/H or 212/H	Phscs 121*	Principles of Physics 1	3.0	ECEn 445	Intro to Mixed Signal VLSI	4.0	ECEn 450	Intro Semiconductor Devices	3.0	ECEn 451	Intro Dig VLSI Circuits	4.0
Doctrine and Covenants	1	2.0	RelC 324/H or 325/H	Phscs 220	Principles of Physics 3.	3.0	ECEn 460	Applied Electromagnetic Theory	3.0	ECEn 483	Feedback Control of Dyn Systems	4.0	ECEn 485	Intro to Digital Comm Theory	4.0
<b>The Individual and Society</b>				<b>b. Complete at least one preprofessional course (other than Engl 312 or 316) from the list of supporting courses shown below.</b>				<b>b. Complete remaining course hours selected from the following:</b>							
Wellness	1or3	1.5–2.0	from approved list	<b>c. 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 for additional details.)</b>				(1) additional courses listed in a above, or other 400-level ECEn courses.							
Citizenship				<b>Complete the following supporting courses (either as a preprofessional or a professional student):</b>				(2) 500-level ECEn courses.							
American Heritage	1–2	3–6.0	from approved list	CS 142	Intro Comp Prog	3.0	CS 235	Foundations of Computer Science 1	3.0	ECEn 452	Experiments in IC Development	1.0	ECEn 455	VLSI Testing	1.0
Global & Cultural Awareness	1	3.0	from approved list†	ECEn 124	Intro to Computing Systems	3.0	ECEn 224	Fundamentals of Digital Systems	3.0	ECEn 461	Electromagnetics Laboratory	1.0	Math 315	Theory of Analysis	3.0
<b>Skills</b>				Math 214	Calculus of Several Variables	3.0	Math 334	Ordinary Differential Equations	3.0	Math 316	Theory of Analysis	3.0	Math 332	Intro to Complex Analysis	3.0
Effective Communication				Math 343	Elementary Linear Algebra	3.0	Math 347	Intro to Partial Differential Eqns	3.0	Math 350	Combinatorics	3.0	Math 355	Graph Theory	3.0
First-Year Writing	1	3.0	from approved list	Phscs 281	Prin of Solid State Physics	3.0	Math 371	Abstract Algebra	3.0	Math 372	Abstract Algebra	3.0	Math 377	Abstract Algebra	3.0
Adv Written & Oral Communication	1	3.0	Engl 312* or 316*	Chem 105*	Gen College Chem	4.0	Math 387	Number Theory	3.0	Math 411	Numerical Methods	3.0	Math 480	Mathematical Models	3.0
Quantitative Reasoning	0–1	0–3.0	from approved list	Chem 111*	Principles of Chemistry	3.0	Math 500-level courses			Phscs 222	Modern Physics	3.0	Phscs 400-level courses		
Languages of Learning (Math or Language)	1	4.0	Math 112*	Chem 111*	Principles of Chemistry	3.0	Phscs 500-level courses			Phscs 500-level courses			Other courses as approved by the department		
<b>Arts, Letters, and Sciences</b>				Engl 312*	Persuasive Writing	3.0									
Civilization 1 and 2	2	6.0	from approved list‡	Engl 316*	Technical Writing	3.0									
Arts	1	3.0	from approved list‡	<b>Complete the following professional requirements:</b>											
Letters	1	3.0	from approved list‡	ECEn 212	Circuit Analysis and Laboratory	5.0	ECEn 313	Electron Circuit Design 1	4.0	ECEn 317	Electronics Lab 1	1.0	ECEn 360	Transmission Lines and Fields	4.0
Scientific Principles & Reasoning				ECEn 361	Trans Lines & Fields Lab	1.0	ECEn 370	Probability Theory	3.0	ECEn 380	Signals & Systems	5.0	ECEn 490	Team Design Project	4.0
Biological Science	1–2	3–6.0	from approved list	ECEn 491	Senior Seminar	0.5									
Physical Science	2	6–7.0	Chem 105* or 111*, Phscs 121*												
Social Science	1	3.0	from approved list												
<b>Core Enrichment: Electives</b>															
Religion Electives	3–4	6.0	from approved list‡												
Open Electives	Variable	Variable	personal choice												
<b>GRADUATION REQUIREMENTS:</b>															
Minimum residence hours required		30.0													
Minimum hours needed to graduate		120.0													

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) RelC 351 or a combination of RelC 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 ELECTRICAL ENGINEERING (393550)

## 2004–2005

**Suggested Sequence of Courses\*:**

**FRESHMAN YEAR**

<u>1st Semester</u>	
CS 142 (FWSpSu)	3.0
1 <sup>st</sup> Year Writing	3.0
HEPE 129	2.0
Math 112 (FWSpSu)	4.0
RelA 121 (FWSpSu)	2.0
<b>Total Hours</b>	<b>14.0</b>

2nd Semester

AHtg 100	3.0
ECEn 124 (FWSu)	3.0
Math 113 (FWSpSu)	4.0
Phscs 121 (FWSpSu)	3.0
RelA 122 (FWSpSu)	2.0
<b>Total Hours</b>	<b>15.0</b>

Spring Term

Phscs 220 (FWSp)	3.0
Arts and Letters elective	3.0
<b>Total Hours</b>	<b>6.0</b>

**SOPHOMORE YEAR**

<u>3rd Semester</u>	
ECEn 212 (FWSp)	5.0
Math 343 (FWSpSu)	3.0
RelA 211 or 212 (FWSpSu)	2.0
Social & Behavioral Science elective	3.0
<b>Total Hours</b>	<b>13.0</b>

4th Semester

ECEn 313 (FWSp)	4.0
ECEn 317 (FWSp)	1.0
ECEn 224 (FWSu)	3.0
Math 214 (FWSpSu)	3.0
Civilization 1	3.0
Religion elective	2.0
<b>Total Hours</b>	<b>16.0</b>

Spring Term

Chem 105 (FWSpSu)	4.0
Math 334 (FWSpSu)	3.0
<b>Total Hours</b>	<b>7.0</b>

**JUNIOR YEAR**

<u>5th Semester</u>	
CS 235 (FWSp)	3.0
ECEn 380 (FWSp)	5.0
Phscs 281 (F)	3.0
Biological Science	3.0
<b>Total Hours</b>	<b>14.0</b>

6th Semester

ECEn 360 (FW)	4.0
ECEn 361 (FW)	1.0
RelC 324 or 325	2.0
ECEn 370 (FW)	3.0
ECEn 4xx - adv. core elective	4.0
<b>Total Hours</b>	<b>14.0</b>

**SENIOR YEAR**

<u>7th Semester</u>	
Engl 312 or 316 (FWSpSu)	3.0
Civilization 2	3.0
ECEn 491 (WF)	0.5
ECEn 4xx adv. core elective	3.0
ECEn 4xx adv. core elective	4.0
Religion elective	2.0
<b>Total Hours</b>	<b>15.5</b>

8th Semester

ECEn 490 (FW)	4.0
ECEn 4xx - adv. core elective	4.0
Religion elective	2.0
Technical elective	4.0
<b>Total Hours</b>	<b>14.0</b>

**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).

\*For other options, please go to the department web site:

[www.ee.byu.edu](http://www.ee.byu.edu) and review the undergraduate information.

**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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