



**BS in COMPUTER ENGINEERING (393540) 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 (92–93 total hours)		
UNIVERSITY CORE REQUIREMENTS (48.5 hours minimum)				<b>Complete the following prerequisite courses:</b>		
<u>Requirements</u>	<u>#Classes</u>	<u>Hours</u>	<u>Classes</u>	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
<b>Doctrinal Foundation</b>				<b>Complete the following supporting courses:</b>		
Book of Mormon	2	4.0	RelA 121/H and 122/H	Chem 105*	General College Chemistry	4.0
New Testament	1	2.0	RelA 211/H or 212/H	<b>Or</b>		
Doctrine and Covenants	1	2.0	RelC 324/H or 325/H	Chem 111*	Principles of Chemistry	3.0
<b>The Individual and Society</b>				C S 142	Introduction to Computer Programming	3.0
Citizenship				C S 235	Data Structures and Algorithms	3.0
American Heritage	1–2	3–6.0	from approved list	C S 236	Discrete Structures	3.0
Global & Cultural Awareness	1	3.0	from approved list†	C S 240	Advanced Programming Concepts	4.0
<b>Skills</b>				Engl 312*	Persuasive Writing	3.0
Effective Communication				<b>Or</b>		
First-Year Writing	1	3.0	from approved list	Engl 316*	Technical Communication	3.0
Adv Written & Oral Communication	1	3.0	Engl 312* or 316*	Math 313	Elementary Linear Algebra	3.0
Quantitative Reasoning	0–1	0–4.0	Math 112* or 113*	Math 334	Ordinary Differential Equations	3.0
Languages of Learning (Math or Language)	1	4.0	Math 112* or 113*	<b>Complete the following courses:</b>		
<b>Arts, Letters, and Sciences</b>				EC En 124	Introduction to Computing Systems	3.0
Civilization 1 and 2	2	6.0	from approved list†	EC En 191	New Student Seminar	0.5
Arts	1	3.0	from approved list†	EC En 212	Circuit Analysis and Laboratory	5.0
Letters	1	3.0	from approved list†	EC En 224	Fundamentals of Digital Systems	3.0
Scientific Principles & Reasoning				EC En 313	Electronic Circuit Design 1	5.0
Biological Science	1–2	3–6.0	from approved list	EC En 320	Digital System Design	3.0
Physical Science	2	6–7.0	Chem 105* or 111* and Phscs 121* or 220*	EC En 324	Computer Systems	3.0
Social Science	1	3.0	from approved list†	EC En 362	Transmission Line Fundamentals	2.0
<b>Core Enrichment: Electives</b>				EC En 370	Probability Theory	3.0
Religion Electives	3–4	6.0	from approved list†	EC En 380	Signals and Systems	4.0
Open Electives	Variable	Variable	personal choice	EC En 391	Junior Seminar	0.5
				EC En 490	Team Design Project	4.0
<b>GRADUATION REQUIREMENTS:</b>				<b>Complete at least 17 hours from the following advanced technical program and technical electives:</b>		
Minimum residence hours required		30.0		<b>a. Complete at least two of the following courses:</b>		
Minimum hours needed to graduate		120.0		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>b. Complete remaining course hours selected from the following:</b>		
				<b>1. Additional courses listed in item a above or other 400-level electrical and computer engineering courses, not including 493R.</b>		
				<b>2. Any of the following:</b>		
				C S 340	Software Design & Testing	3.0
				C S 345	Operating Systems Design	3.0
				C S 360	Internet Programming	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 Comms & Networking	3.0
				C S 462	Large-Scale Distributed System Design	3.0
				C S 465	Computer Security	3.0
				C S 470	Intro to Artificial Intelligence	3.0
				C S 478	Tools for Machine Learning & Data M	3.0
				<b>3. 500-level computer science courses</b>		
				<b>Note:</b> 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.		

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) 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.

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## 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 <sup>st</sup> Year Writing or A Htg	3.0
Math 112 (FWSpSu)	4.0
Rel A 121 (FWSpSu)	2.0
<b>Total Hours</b>	<b>16.5</b>

### 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
<b>Total Hours</b>	<b>15.0</b>

### 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
<b>Total Hours</b>	<b>17.0</b>

### 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
<b>Total Hours</b>	<b>16.0</b>

### JUNIOR YEAR

<u>5th Semester</u>	
C S 240 (FWSu)	4.0
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
<b>Total Hours</b>	<b>16.5</b>

### 6th Semester

EC En 320 (FW)	3.0
EC En 362 (FWSp)	2.0
EC En 380 (FWSp)	4.0
Technical elective	3.0
University core requirement	3.0
<b>Total Hours</b>	<b>16.0</b>

### SENIOR YEAR

<u>7th Semester</u>	
EC En 370 (FW)	3.0
Technical elective	4.0
Technical elective	4.0
University core requirement	3.0
Religion elective	2.0
<b>Total Hours</b>	<b>16.0</b>

### 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
<b>Total Hours</b>	<b>15.0</b>

\*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).

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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