



BS in ELECTRICAL ENGINEERING (393550) MAP Sheet
 Department of Electrical and Computer Engineering
 For students entering the degree program during the 2011–2012 curricular year.

| UNIVERSITY CORE AND GRADUATION REQUIREMENTS | | | | PROGRAM REQUIREMENTS (91-92 total hours) | | |
|---|-----------------|--------------|----------------------------------|--|--|-----|
| UNIVERSITY CORE REQUIREMENTS | | | | Complete the following prerequisite courses: | | |
| <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 |
| Doctrinal Foundation | | | | Complete the following supporting courses: | | |
| Book of Mormon | 2 | 4.0 | Rel A 121/H and 122/H | Chem 105* | General College Chemistry | 4.0 |
| New Testament | 1 | 2.0 | Rel A 211/H or 212/H | Or | | |
| Doctrine and Covenants | 1 | 2.0 | Rel C 324/H or 325/H | Chem 111* | Principles of Chemistry | 3.0 |
| The Individual and Society | | | | 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 | Engl 312* | Persuasive Writing | 3.0 |
| Global & Cultural Awareness | 1 | 3.0 | from approved list† | Or | | |
| Skills | | | | Engl 316* | Technical Communication | 3.0 |
| Effective Communication | | | | Math 313 | Elementary Linear Algebra | 3.0 |
| First-Year Writing | 1 | 3.0 | from approved list | Math 314 | Calculus of Several Variables | 3.0 |
| Adv Written & Oral Communication | 1 | 3.0 | Engl 312* or 316* | Math 334 | Ordinary Differential Equations | 3.0 |
| Quantitative Reasoning | 0–1 | 0–4.0 | Math 112* or 113* | Phscs 281 | Principles of Solid State Physics | 3.0 |
| Languages of Learning (Math or Language) | 1 | 4.0 | Math 112* or 113* | Complete the following: | | |
| 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 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 | 3–5.0 | from approved list | EC En 360 | Electromagnetic Fields & Waves | 3.0 |
| Physical Science | 2 | 6–7.0 | Chem 105* or 111* and Phscs 121* | EC En 362 | Transmission Line Fundamentals | 2.0 |
| Social Science | 1 | 3.0 | from approved list‡ | EC En 370 | Probability Theory | 3.0 |
| Core Enrichment: Electives | | | | EC En 380 | Signals and Systems | 4.0 |
| Religion Electives | 3–4 | 6.0 | from approved list‡ | EC En 391 | Junior Seminar | 0.5 |
| Open Electives | Variable | Variable | personal choice | EC En 490 | Team Design Project | 4.0 |
| GRADUATION REQUIREMENTS: | | | | 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. | | |
| Minimum residence hours required | | 30.0 | | a. Complete 17 hours from the following: | | |
| Minimum hours needed to graduate | | 120.0 | | EC En 320 | Digital System Design | 3.0 |
| | | | | EC En 324 | Computer Systems | 3.0 |
| | | | | EC En 425 | Real-Time Operating Systems | 4.0 |
| | | | | EC En 427 | Embedded Systems | 4.0 |
| | | | | EC En 443 | Communication and Power Circuits | 4.0 |
| | | | | EC En 445 | Introduction to Mixed-Signal VLSI | 4.0 |
| | | | | EC En 450 | Introduction to Semiconductor Devices | 3.0 |
| | | | | EC En 451 | Introduction to Digital VLSI Circuits | 4.0 |
| | | | | EC En 452 | Experiments in Integrated Circuit Dev | 1.0 |
| | | | | EC En 462 | Electromagnetic Radiation & Prop | 2.0 |
| | | | | EC En 464 | Wireless Communication Circuits | 2.0 |
| | | | | EC En 466 | Introduction to Optical Engineering | 2.0 |
| | | | | EC En 483 | Design of Control Systems | 4.0 |
| | | | | EC En 485 | Intro to Digital Communication Theory | 4.0 |
| | | | | EC En 487 | Intro to Discrete-Time Signal Processing | 4.0 |
| | | | | b. Complete remaining course hours selected from the following: | | |
| | | | | 1. Additional courses listed in item a above. | | |
| | | | | 2. 500-level electrical and computer engineering courses. | | |
| | | | | 3. Other engineering, mathematics, physics, or computer science courses as specified or approved by the Electrical and Computer Engineering Department. Preapproved courses include C S 236, 240, and Phscs 222. | | |

FOR GE QUESTIONS CONTACT THE ADVISEMENT CENTER ◆ FOR PROGRAM QUESTIONS SEE YOUR DEPARTMENT ADVISOR
 *THESE CLASSES 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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2011–2012

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 or A Htg | 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 (FWSp) | 3.0 |
| First-Year Writing or A Htg | 3.0 |
| Rel A 122 (FWSpSu) | 2.0 |
| Total Hours | 15.0 |

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 |
| 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

| | |
|---------------------|-------------|
| <u>5th Semester</u> | |
| EC En 313 (FWSp) | 5.0 |
| EC En 391 (F) | 0.5 |
| Engr 312 or 316 | 3.0 |
| Math 314 (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) | 3.0 |
| EC En 362 (FWSp) | 2.0 |
| EC En 380 (FWSp) | 4.0 |
| University core requirement | 3.0 |
| Religion elective | 2.0 |
| Total Hours | 14.0 |

SENIOR YEAR

| | |
|-----------------------------|-------------|
| <u>7th Semester</u> | |
| Technical elective | 4.0 |
| Technical elective | 4.0 |
| Technical elective | 4.0 |
| University core requirement | 3.0 |
| Total Hours | 15.0 |

8th Semester

| | |
|-----------------------------|-------------|
| EC En 490 (FW) | 4.0 |
| Technical elective | 4.0 |
| Technical elective | 4.0 |
| University core requirement | 3.0 |
| Religion elective | 2.0 |
| Total Hours | 17.0 |

*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 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).

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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