**UNIVERSITY CORE AND GRADUATION REQUIREMENTS**

### UNIVERSITY CORE REQUIREMENTS

<table>
<thead>
<tr>
<th>Requirements</th>
<th>#Classes</th>
<th>Hours</th>
<th>Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Doctrinal Foundation</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Book of Mormon</td>
<td>2</td>
<td>4.0</td>
<td>RelA 121/H and 122/H</td>
</tr>
<tr>
<td>New Testament</td>
<td>1</td>
<td>2.0</td>
<td>RelA 211/H or 212/H</td>
</tr>
<tr>
<td>Doctrine and Covenants</td>
<td>1</td>
<td>2.0</td>
<td>RelC 324/H or 325/H</td>
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<tr>
<td><strong>The Individual and Society</strong></td>
<td></td>
<td></td>
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<tr>
<td>Citizenship</td>
<td>1–2</td>
<td>3–6.0</td>
<td>from approved list</td>
</tr>
<tr>
<td>Global &amp; Cultural Awareness</td>
<td>1</td>
<td>3.0</td>
<td>Eng T 231*</td>
</tr>
<tr>
<td><strong>Skills</strong></td>
<td></td>
<td></td>
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<tr>
<td>Effective Communication</td>
<td></td>
<td></td>
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<tr>
<td>First-Year Writing</td>
<td>1</td>
<td>3.0</td>
<td>from approved list</td>
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<tr>
<td>Adv Written &amp; Oral Communication</td>
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<tr>
<td>Quantitative Reasoning</td>
<td>0–1</td>
<td>0–4.0</td>
<td>Math 112* or 113*</td>
</tr>
<tr>
<td>Languages of Learning (Math or Language)</td>
<td>1</td>
<td>4.0</td>
<td>Math 112* or 113*</td>
</tr>
<tr>
<td><strong>Arts, Letters, and Sciences</strong></td>
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<tr>
<td>Civilization 1 and 2</td>
<td>2</td>
<td>6.0</td>
<td>from approved list‡</td>
</tr>
<tr>
<td>Arts</td>
<td>1</td>
<td>3.0</td>
<td>from approved list‡</td>
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<tr>
<td>Letters</td>
<td>1</td>
<td>3.0</td>
<td>from approved list‡</td>
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<tr>
<td>Scientific Principles &amp; Reasoning</td>
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<tr>
<td>Biological Science</td>
<td>1–2</td>
<td>3–6.0</td>
<td>from approved list‡</td>
</tr>
<tr>
<td>Physical Science</td>
<td>2</td>
<td>6–7.0</td>
<td>Chem 105* or 111* and Phscs 121*</td>
</tr>
<tr>
<td>Social Science</td>
<td>1</td>
<td>3.0</td>
<td>Eng T 231*</td>
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<tr>
<td><strong>Core Enrichment: Electives</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Religion Electives</td>
<td>3–4</td>
<td>6.0</td>
<td>from approved list</td>
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<tr>
<td>Open Electives</td>
<td>Variable</td>
<td>Variable</td>
<td>personal choice</td>
</tr>
</tbody>
</table>

### PROGRAM REQUIREMENTS (95–96 total hours)

**Complete the following prerequisite courses:**

- **Math** 112* Calculus 1
- **Math** 113* Calculus 2
- **Phscs** 121* Principles of Physics 1
- **Phscs** 220 Principles of Physics 3

**Complete the following supporting courses:**

- **Chem** 105* General College Chemistry
- or **Chem** 111* Principles of Chemistry

### For program questions see your Department Advisor

### For university core questions contact the advisement center

*These courses fill both university core and program requirements (16–17.0 hours overlap)

### 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.

**Complete at least 17 hours from the following advanced technical program and technical electives:**

- Complete at least two of the following courses:
  - **EC En** 425 Real-Time Operating Systems
  - **EC En** 427 Embedded Systems
  - **EC En** 451 Introduction to Digital VLSI Circuits

- Complete remaining course hours selected from the following:
  1. Additional courses listed in item a above or other 400-level electrical and computer engineering courses, not including 490 or 493R.
  2. Any of the following:
     - **CS** 340 Software Design & Testing
     - **CS** 345 Operating Systems Design
     - **CS** 360 Internet Programming
     - **CS** 428 Software Engineering
     - **CS** 431 Algorithmic Languages and Compilers
     - **CS** 452 Database Modeling Concepts
     - **CS** 455 Computer Graphics
     - **CS** 456 Introduction to User Interface Software
     - **CS** 460 Computer Comms & Networking
     - **CS** 462 Large-Scale Distributed System Design
     - **CS** 465 Computer Security
     - **CS** 470 Intro to Artificial Intelligence
     - **CS** 478 Tools for Machine Learning & Data M
     - **CS** 484 Parallel Processing
  3. 500-level computer science courses

**Core Enrichment: Electives**

- **RelA** 121/H and 122/H
- **RelA** 211/H or 212/H
- **RelC** 324/H or 325/H
- **Eng T** 231*

### 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.

### Graduation Requirements:

| Minimum residence hours required | 30.0 |
| Minimum hours needed to graduate | 120.0 |
**Suggested Sequence of Courses***:

**FRESHMAN YEAR**

1st Semester
- EC En 191 (FW) 0.5C 142 (FWSpSu) 3.0Chem 105 (FWSpSu) 4.0
- 1st Year Writing or A Htg 3.0
- Math 112 (FWSpSu) 4.0Rel 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**

3rd Semester
- C S 235 (FWSpSu) 3.0
- EC En 224 (FW)  3.0Math 313 (FWSpSu) 3.0
- Phscs 220 (FWSp) 3.0
- Eng T 231 3.0
- Rel A 211 or 212  (FWSpSu) 2.0
**Total Hours 17.0**

4th Semester
- C S 236 (FWSpSu) 3.0
- EC En 212 (FWSp) 5.0
- EC En 324 (FWSpSu) 3.0
- University core requirement 3.0
- Religion elective 2.0
**Total Hours 16.0**

**JUNIOR YEAR**

5th Semester
- 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
**Total Hours 17.5**

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
**Total Hours 15.0**

**SENIOR YEAR**

7th Semester
- EC En 370 (FW)  3.0
- Technical elective 4.0
- Technical elective 4.0
- University core requirement 3.0
- Religion elective 2.0
**Total Hours 16.0**

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
**Total Hours 15.0**

*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.*

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**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 moderns, 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.

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**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).

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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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Email: engineering_advisement@byu.edu

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