## 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>
<td></td>
</tr>
<tr>
<td>Book of Mormon</td>
<td>2</td>
<td>4.0</td>
<td>Rel A 121/H and 122/H</td>
</tr>
<tr>
<td>New Testament</td>
<td>1</td>
<td>2.0</td>
<td>Rel A 211/H or 212/H</td>
</tr>
<tr>
<td>Doctrine and Covenants</td>
<td>1</td>
<td>2.0</td>
<td>Rel C 324/H or 325/H</td>
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<tr>
<td><strong>The Individual and Society</strong></td>
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<tr>
<td>Citizenship</td>
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</tr>
<tr>
<td>American Heritage</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>
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<tr>
<td>Adv Written &amp; Oral Communication</td>
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<td>3.0</td>
<td>from approved list</td>
</tr>
<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>
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<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>
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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>3–5.0</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>
</tr>
<tr>
<td>Open Electives</td>
<td>Variable</td>
<td>Variable</td>
<td>personal choice</td>
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</tbody>
</table>

### PROGRAM REQUIREMENTS

#### Complete the following prerequisite courses:
- **Math**
  - 112* Calculus 1
  - 113* Calculus 2
- **Phscs**
  - 121* Principles of Physics 1
  - 220* Principles of Physics 3

#### Complete the following supporting courses:
- **Chem**
  - 105* General College Chemistry
- **Or**
  - 111* Principles of Chemistry
- **C S**
  - 142 Introduction to Computer Programming
  - 235 Data Structures and Algorithms

#### Complete the following:
- **EC En**
  - 191 New Student Seminar
  - 220 Fundamentals of Digital Systems
  - 240 Circuit Analysis and Laboratory
  - 330 Intro to Embedded System Programming
  - 340 Electronic Circuit Design 1
  - 360 Electromagnetic Fields & Waves
  - 370 Probability Theory
  - 380 Signals and Systems
  - 390 Junior Team Design Project
  - 391 Junior Seminar
  - 490 Team Design Project

### Graduation Requirements:
- Minimum residence hours required: 30.0
- Minimum hours needed to graduate: 120.0

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**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.

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**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.
Suggested Sequence of Courses:

FRESHMAN YEAR
1st Semester
- EC En 191 (FW)  0.5
- C S 142 (FWSpSu)  3.0
- Chem 105 (FWSpSu)  4.0
- 1st Year Writing or A Htg  3.0
- Math 112 (FWSpSu)  4.0
- Rel A 121 (FWSpSu)  2.0
Total Hours  16.5

2nd Semester
- C S 235 (FWSpSu)  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
- EC En 220 (FW)  3.0
- Math 313 (FWSpSu)  3.0
- Phscs 220 (FWSpSu)  3.0
- Eng T 231  3.0
- University core requirement  3.0
- Rel A 211 or 212 (FWSpSu)  2.0
Total Hours  17.0

4th Semester
- EC En 240 (FWSp)  4.0
- Math 314 (FWSpSu)  3.0
- Math 334 (FWSpSu)  3.0
- University core requirement  3.0
- Religion elective  2.0
Total Hours  15.0

JUNIOR YEAR
5th Semester
- EC En 330 (FSp)  4.0
- EC En 340  4.0
- EC En 380 (F)  4.0
- EC En 391 (F)  0.5
- Rel A 324 or 325  2.0
Total Hours  14.5

6th Semester
- EC En 360 (W)  4.0
- EC En 370 (WSp)  3.0
- EC En 390 (W)  3.0
- University core requirement  3.0
- Religion elective  2.0
- Total Hours  15.0

SENIOR YEAR
7th Semester
- Technical elective  4.0
- Technical elective  4.0
- Technical elective  4.0
- University core requirement  3.0
- Religion elective  2.0
- Total Hours  17.0

8th Semester
- EC En 490 (FW)  4.0
- Technical elective  4.0
- Technical elective  4.0
- Engl 312 or 316  3.0
- 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.

THE DISCIPLINE:
Electrical and Computer Engineering is one of the most exciting, diverse, and forward-looking disciplines offered at the university. Contemporary society is in the midst of an information revolution, created in large part from the fruits of electrical and computer engineering. Electrical and computer engineers have been primary contributors to the astonishing developments in communication, computer, and network technology. They have designed devices and systems that have a significant impact on manufacturing, medicine, transportation, and environmental monitoring. Smart phones, tablets, digital cameras, high definition television, solar power, microprocessors, lasers, unmanned air vehicles, medical imaging systems, and autonomous robotic systems are all examples of devices and systems designed by electrical and computer engineers. Innovations that flow out of electrical and computer engineering sustain the national economy and improve the quality of life for people throughout the world. In the future, society will look to electrical and computer engineers to address grand challenges ranging from sustainable and efficient energy to health care technologies and global communications networks.

The Department of Electrical and Computer Engineering at Brigham Young University offers accredited degrees in Electrical Engineering and Computer Engineering. Electrical Engineering focuses on microelectronics, electromagnetics, electronic circuits, wireless communications, signal processing, biomedical applications, photonics, and controls. Computer Engineering focuses on the design of digital computing devices and systems and involves hardware and software, operating systems, digital logic, real-time systems, and computer vision. Both programs combine fundamental principles with hands-on learning, including an innovative Junior Core experience that integrates classroom knowledge with project-based learning.

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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