## Electrical Engineering

### Freshman Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1371 Calculus I (placement into course or pre-req)</td>
<td>Math 1372 Calculus II (1371)</td>
</tr>
<tr>
<td>Phys 1301W Intro Physics I (&amp;Math 1371)</td>
<td>Phys 1302W Intro Physics II (1301, &amp;Math 1372)</td>
</tr>
<tr>
<td>CSE 1001 1st Yr Experience</td>
<td>EE1301 Intro to Comp Sys (Math 1371)</td>
</tr>
<tr>
<td>Liberal Education course or Writ 1301</td>
<td>EE 1001 Intro to EE and CompE (optional)</td>
</tr>
<tr>
<td>Liberal Education course</td>
<td>Liberal Education course or Writ 1301</td>
</tr>
</tbody>
</table>

### Sophomore Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 2373 Lin Alg/Diff Eq (1372)</td>
<td>Math 2374 Multivariable Calc (1372)</td>
</tr>
<tr>
<td>Chem 1061 Chem Princ I (placement into course, 1015, &amp;1065)</td>
<td>EE 2361 Intro Microcontrollers (CSE, 1301 or CSci 1113, 2301)</td>
</tr>
<tr>
<td>EE 2001 Intro to Circ &amp; Elec (&amp;Math 2373, &amp;Phys 1302)</td>
<td>OR</td>
</tr>
<tr>
<td>EE 2301 Intro Dig Sys Des (CSE, Math 1372)</td>
<td>Chem 1062 Chem Princ II (1061, &amp;1066)</td>
</tr>
</tbody>
</table>

### About This Plan

- This plan is not a contract. Curriculum can change. The APAS is the official method for tracking completion of University degree requirements.
- Shaded courses are only offered in the indicated semester.
- Course pre-requisites and co-requisites (designated by &) are listed below the course number and title.
- Students can take either the CSE-only or University-wide versions of the math course (Math 1371/1271, 1372/1272, 2373/2243, 2374/2263).

### Applying to your Major

Students who have completed the required courses for admission to this major (indicated with double boxes on plan) and have a 3.2 UM-TC technical GPA at the end of the fall semester will be guaranteed admission. All other students who have completed the required courses will be considered for admission on a space-available basis. Admission following the spring semester is only based on space availability. The major application database is available at z.umn.edu/csemajorapp.

### Total Credits Needed for Degree: 124
Electrical Engineering

POSSIBLE POSITIONS

- **Application engineer**: Develop, create, and modify general computer applications software or specialized utility programs.
- **Computer hardware engineer**: Design and develop computer hardware, such as computer chips, circuit boards, modems, and printers. Also test hardware and supervise its installation.
- **Electronic engineer**: Employ knowledge of electronic theories and material properties to research, design, develop, and test electronic components and systems that are used in industrial, military, scientific, or commercial uses.
- **Firmware engineer**: Creates software used in electronic devices.
- **Software engineer**: Applies the principles and techniques of computer science, engineering, and mathematical analysis to the design, development, testing, and evaluation of the software and systems that enable computers to perform applications. Must possess strong programming skills, but are more concerned with developing algorithms and analyzing and solving programming problems than with writing code.
- **Test engineer**: Lay out, build, test, troubleshoot, repair, and modify developmental and production electronic components, parts, equipment, and systems.

**Some of these positions may require an advanced degree.**

INDUSTRIES

- Acoustics
- Antennas and propagation
- Automation
- Automotive
- Broadcasting
- Circuits and systems
- Consulting
- Electrical insulation
- Geoscience
- Healthcare
- HVAC systems
- Industrial/food products
- Lasers and electro-optics
- Magnetics
- Medical technologies
- Nuclear and plasma sciences
- Oceanic engineering
- Power electronics
- RF Communications
- Robotics
- Supercomputing
- Supercomputing
- Telecommunications
- Ultrasonics

EMPLOYERS

- 3M
- Boston Scientific
- Cummins
- Daikin Applied
- Emerson
- Entrust Datacard
- Honeywell
- Fluke Thermography
- Ford Motor Company
- Graco
- IBM
- Medtronic
- MISO
- Open Systems International
- Seagate
- Starkey Hearing Technologies
- Ulteig
- UTC Aerospace
- Wold Architects and Engineers
- Xcel Energy

CSE Career Outcomes

**Average Starting Salary:**

$64,406*

**Post-graduation Outcomes:***

Grad School: 27.5%

Employed: 71.5%

Other: 1%

*Salary and Career Outcomes gathered from the 2016-2017 CSE Graduation Survey. Post-graduation outcomes reflect the percentage of students who were employed full-time in their field or were enrolled in a graduate program.

More Information on

Undergraduate Majors: cse.umn.edu/majors

Please visit the Career Center to continue exploring this major.