



Electrical Engineering

Rev. Date:
9/2015

Freshman Year

Fall Semester

Math 1371 Calculus I 4
(placement into course or pre-req)

Phys 1301W Intro Physics I 4
(&Math 1371)

Lib Ed or Writ 1301/1401 3/4

Liberal Education course 3/4

CSE 1001: 1st Yr Experience 1

Spring Semester

Math 1372 Calculus II 4
(1371)

Phys 1302W Intro Physics II 4
(1301, &Math 1372)

EE 1301 Intro to Computing Systems 4
(Math 1371)

EE 1001 Intro to EE and CompE 1
optional

Lib Ed or Writ 1301/1401 3/4

Sophomore Year

Fall Semester

Chem 1061/65 Chem Princ I 4
(placement into course, or 1015)

EE 2001 Intro to Circ & Elec 3
(&Math 2373, &Phys 1302)

EE 2002 Intro Circ/Elec Lab 1
(2001 or &2001)

EE 2301 Intro Dig Sys Desig 4
(Math 1372)

Math 2373 Lin Alg/Diff Eq. 4
(1372)

Spring Semester

EE 2011 LinSys, Circ, & Ele 3
(2001)

EE 2361 Intro to Microcontrollers 4
(1301, 2301, or CSci 1113, or CSci 1133)

Math 2374 Multivariable Calc 4
(1372)

Chem 1062/66 Chem Princ II 4
(1061/65)

OR
Phys 2503 or 2303 Physics III 4
(2503 offered Fall, 2303 offered Spring)
(1302, Math 1372)

Junior Year

Fall Semester

EE 3015 Signals & Systems 3
(2011)

EE 3101 Circ & Electr Lab I 2
(3115 or &3115)

EE 3115 Analog Electronics 3
(3015 or &3015)

Technical Elective 3/4

Liberal Education course 3/4

Spring Semester

EE 3025 Statistical Methods 3
(3015)

EE 3102 Circ & Electr Lab II 2
(3101)

EE 3161 Semiconductor Dev 3/4
(2011, Phys 1302, &Phys 2303 or &Phys 2503 or &Chem1062/1066)

EE 3601 Transmission Lines 3
(2011, Phys 1302, Math 2373)

Liberal Education course 3/4

Senior Year

Fall Semester

Technical Elective 3/4

Technical Elective 3/4

Technical Elective 3/4

Liberal Education course 3/4

Spring Semester

EE 4951W Senior Design Proj 4
(3015, 3102, 3115)

Technical Elective 3/4

Technical Elective 3/4

Technical Elective 3/4

About This Plan

- This plan is not a contract. Curriculum can change.
- 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).
- Double boxed courses are required for application to this major.
- Chemical Principles labs (1065/1066) must be taken concurrently with the lectures (1061/1062).
- Liberal Education and Writing requirements with an (*) will be fulfilled by taking courses required for this major at UM-TC.

Applying to your Major

Students who have completed the required courses for admission to this major 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.

Department Contact Information

- Website: www.ece.umn.edu/undergraduate/
- Additional Information: z.umn.edu/ecematrix
- Main Office: 3-166 Keller; Main Phone: 612-624-7777
- Director of Undergraduate Studies: Professor Rhonda Franklin
- Department Advisors: Frances Wood and Roopa Sukumaran Berzins
- Department Advising Email: fkwood@umn.edu

Liberal Education Information

All students must complete the following Writing & Liberal Education requirements, as noted on their APAS report. See link for full Core & Theme names: z.umn.edu/liberaleducation

Writing Requirements:	Liberal Education	
University Writing: Writ 1301/1401 or equivalent	CORES:	THEMES:
Writing Intensive (WI): Two: 1xxx or 2xxx level ** One: 3/4/5xxx level (in major)* One: 3/4/5xxx level (any dept.)	Bio Phy* His SocS Ltr AH Mth*	4 of 5: Civ DSJ Env GP TS

Total Credits Needed for Degree: 126

What can I do with a major in electrical engineering?

From geographical information systems that can provide the location of a vehicle to giant electric power generators, electrical and electronics engineers are responsible for a wide range of technologies. Electrical engineers design, develop, document, and test electrical and electronic equipment and systems. This includes utility systems, electric motors, and machinery as well as wiring in buildings, automobiles, and airplanes. Electronic equipment includes radar, computers, communication equipment and home entertainment. They apply the concepts and knowledge of science to help solve problems, generally specializing in fields such as power distribution, integrated circuits, computers, manufacturing or communications. There is a growing need for electrical engineers specializing in industrial robots and automation systems as well as lasers and electro-optics.

Employers *(sample listing)*

Caterpillar	Cummins Inc	Siemens
Cargill	Dow Chemical Company	Dupont
Cummins	Eaton Corp.	Accenture
Tata Consultancy Services	Flint Hills Resources	Microsoft Co.
Avery Dennison	Garmin International	Logic PD
LasX	Dell	Lockheed Martin
Beckman Coulter	General Mills Inc.	Medtronic
Alliant Techsystems	Mayo Clinic	National Instruments
Boston Scientific	IBM	Polaris Industries
3M	Ingersoll Rand	Schlumberger
Boeing Company	ExxonMobil	Seagate Technology

Industries *(sample listing)*

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

Positions *(sample listing)*

Computer Hardware Engineer: Designs and develops computer hardware, such as computer chips, circuit boards, modems, and printers. Computer hardware engineers also test hardware and supervise its installation.

Power Engineer: Deals with the generation, transmission and distribution of electricity as well as the design of related devices, including transformers, electric generators, electric motors, high voltage engineering, and power electronics.

Control Engineer: Focuses on the modeling of a diverse range of dynamic systems and the design of controllers that will cause these systems to behave in the desired manner.

Electronic Engineer: Focuses on the modeling of a diverse range of dynamic systems and the design of controllers that will cause these systems to behave in the desired manner.

Telecommunication Engineer: Focuses on the transmission of information across a channel such as a coax cable, optical fiber, or free space.

*Some positions may require an advanced degree.

Career Center

cse.umn.edu/career

Salary Information

z.umn.edu/csosalary

More Information on Undergraduate Majors

cse.umn.edu/majors