



# UNIVERSITY OF MINNESOTA

## Department of Electrical and Computer Engineering

### At a Glance

**Robert E. Rice**  
Academic Advising  
Center

3-166 Keller Hall  
612-624-7777

### Five-Year Masters Program

The Department of Electrical and Computer Engineering offers a combined degree program allowing students to receive their Bachelors in Electrical Engineering or Computer Engineering alongside a Masters in Electrical Engineering in as little as five years.

This opportunity is open to high-achieving students (currently at least a 3.4 GPA) and takes additional planning with your Academic Advisor.



### Department statistics

Graduates of program  
(Five-year average)  
151 Bachelors per year  
88 Masters per year  
30 Doctorates per year  
47 Faculty  
55 Teaching assistants  
125 Research assistants  
18 Staff

4-174, Keller Hall  
200 Union St. SE,  
Minneapolis, MN 55455  
www.ece.umn.edu

### What is ECE?

The Department of Electrical and Computer Engineering (ECE) students and faculty exemplify the University's motto "Driven to Discover." We are one of the leading international programs in electrical and computer engineering education and research.

ECE faculty and students serve as key sources of scientific and engineering talent, expertise, and innovative ideas for communication, software, electronics and biotechnology companies worldwide.

A recent survey of College of Science and Engineering (CSE) graduates, and ECE graduates in particular, reported more than 4,000 alumni-founded companies that are active today employing more than half a million people worldwide and generating \$90 billion in annual revenue.

### Possible Choices for Electrical and Computer Engineering Emphases

- Biomedical Engineering
- Control Systems
- Telecommunications and Signal Processing
- Electric Energy Systems
- Renewable Energy
- Optics and Magnetics
- Microelectronics and Materials
- Nanotechnology
- Robotics and Embedded System Design
- Computer Networks
- Computer-Aided Design
- Computer Architecture and Software
- Medicine
- Management and Business
- The History of Science and Technology
- Mathematics
- Physics
- Actuarial Science
- Law
- Entrepreneurship

### Some Things that Electrical and Computer Engineers Make

- Pacemakers and defibrillators
- X-ray, MRI, and Ultrasound scanners
- Blood analyzers on a chip
- Industrial Robots
- Aircraft and Space Vehicles
- Computer disk drives
- Cell Phones
- Speech recognizers and synthesizers
- Power stations
- Microprocessors
- Electric Vehicles
- Wind Turbine components
- Fiber optic communication
- Microoptical instruments
- Magnetic and Optical Storage
- Microchips
- Flat Panel Displays
- Network switches
- Operating Systems
- Distributed Computer Systems

### Typical Coursework for Electrical Engineers

#### First Year

Calculus – 2 Semesters  
Physics – 2 Semesters  
University Writing  
Computing Systems  
Intro to Electrical Engineering  
Liberal Education – 2 Semesters

#### Second Year

Calculus – 2 Semesters  
General Chemistry  
Physics of Matter  
Digital System Design  
Microcontrollers  
Circuits and Electronics  
Linear Systems and Circuits  
Liberal Education

#### Third Year

Analog & Digital Electronics  
Semiconductor Devices  
Signals & Systems  
Statistical Methods  
Circuits and Electronics  
Lab – 2 Semesters  
Transmission Lines  
Technical Elective  
Liberal Education- 2 Semesters

#### Fourth Year

Senior Design Project  
Technical Electives – 7-9 courses  
Technical Labs – 2 courses  
Liberal Education

### Typical Coursework for Computer Engineers

#### First Year

Calculus – 2 Semesters  
Physics – 2 Semesters  
University Writing  
Computing Programming  
Intro to Electrical Engineering  
Liberal Education – 2 Semesters

#### Second Year

Calculus – 2 Semesters  
Discrete Structures  
Computer Programming  
Digital System Design  
Microcontrollers  
Circuits and Electronics  
Linear Systems and Circuits  
Liberal Education

#### Third Year

Analog & Digital Electronics  
Algorithms & Data Structures  
Signals & Systems  
Statistical Methods  
Circuits and Electronics  
Lab – 2 Semesters  
Computer Architecture  
Technical Elective  
Liberal Education- 2 Semesters

#### Fourth Year

Senior Design Project  
Technical Electives – 6-8 courses  
Technical Labs – 2 courses  
Operating Systems  
Liberal Education