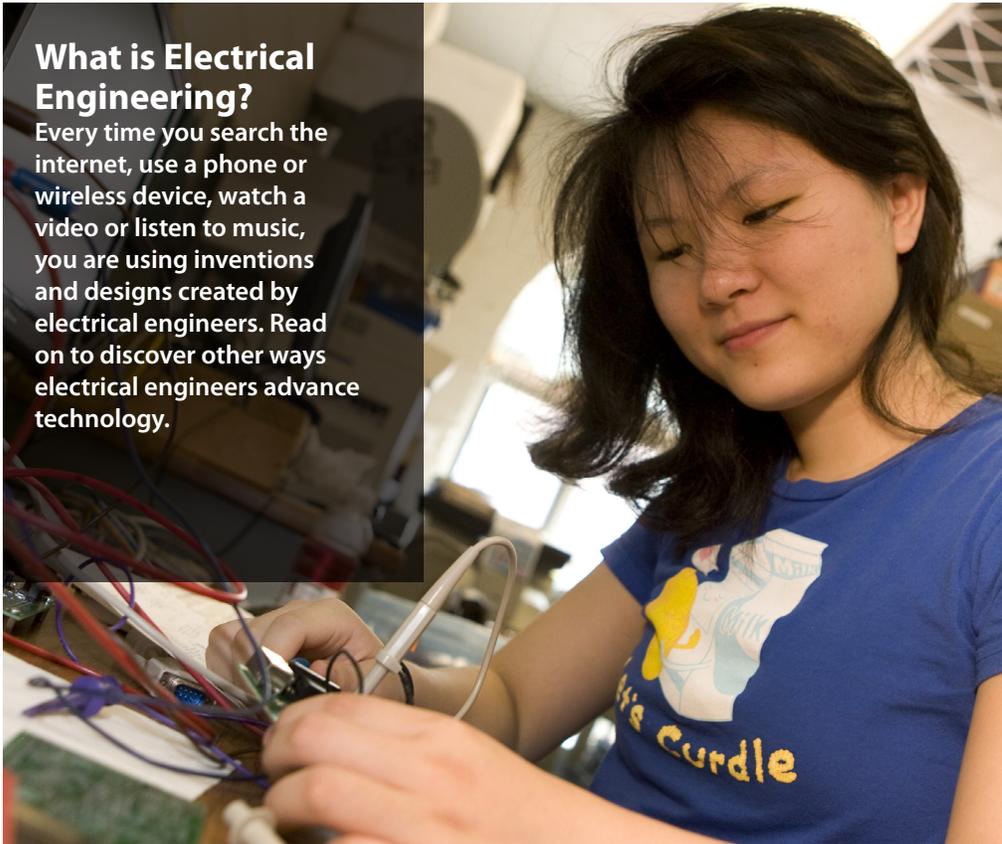


## What is Electrical Engineering?

Every time you search the internet, use a phone or wireless device, watch a video or listen to music, you are using inventions and designs created by electrical engineers. Read on to discover other ways electrical engineers advance technology.



## Major areas of emphasis

To prepare students for a career in this dynamic profession, the Bachelor of Electrical Engineering degree stresses the fundamentals on which the profession is built. In addition, we offer a range of choices that shape the details of each student's program in the junior and senior years. By selecting appropriate technical electives, you can specialize in areas such as **cybersecurity, multimedia signal processing, communications, nanofabrication, materials and devices, circuit and system design**. The department offers minors in Bioelectrical Engineering, Cybersecurity and Sustainable Energy Technology.

Active research ensures that the content of the undergraduate program is constantly renewed and maintained at a challenging technical level and integrates discovery learning into the program. Opportunities abound for electrical engineering undergraduates to work with faculty and graduate students as research assistants, either for pay or independent study credit. We want our graduates to have the skills necessary to pursue advanced degrees.

UD electrical and computer engineering graduates pursue exciting, rewarding, and successful careers. One graduate is founder of Infinera, a company whose mission is to provide an infinite pool of intelligent bandwidth to global network operators. Another received an Academy Award for technical achievement in motion picture special effects, in *Titanic*, while others have formed successful start-ups.

## Endless career opportunities

**Looking for light?** Electrical engineers work on a wide array of devices and systems involving the transformation and transmission of light, from photovoltaic solar cells to fiber optics and lasers.

**Turned on by power?** Electrical engineers are responsible for many aspects of power generation, including sustainable energy technology. They work to increase the efficiency of appliances and design power plants and smart grids.

**Gotta have gadgets?** Electrical engineers create the electronic components and algorithms that run many consumer products, increasing their utility, convenience, reliability, and entertainment value.

**Care about communication?** As compulsive communicators, we humans rely on electrical engineers to enable us to share our words, voices, and images over long distances or to broadcast them to wide audiences.

**Wonder about wireless?** Smart phones, wireless computer networks, and global positioning systems are just the beginning of the wireless technologies designed by electrical engineers.

**Have a biological bent?** Many medical imaging and diagnostic technologies have been developed with electrical engineering expertise. Engineers are also working to develop human-machine systems and computers that mimic biological systems.

**Fascinated by the future?** Electrical engineers anticipate tomorrow's technology needs, developing smaller and faster computer chips, virtual reality, robotics, remote-sensing satellites, molecular level circuits, superconducting materials, and more.

Whether they work in established or emerging industries, electrical engineers apply the basic sciences of mathematics, physics, chemistry, and materials science to control and transform energy and information in ways that are vital to the operation of modern society.

## Additional study opportunities

### Exploring the humanities and social sciences through the breadth requirements

All engineering curricula include self-selected humanities and social science courses. The required 21 credits of breadth coursework include 18 credits of humanities and social sciences, and 3 credits of chemistry, math or physics.

*Please note: 3 of the above credits must also satisfy the Multicultural Requirement (University requirement); 6 credits must be above the introductory level (College requirement); and already completed Advanced Placement (AP) credit may apply toward these requirements.*

### Exploring other subjects through minors

A minor is a small set of courses in a particular subject area that differs from a student's major. Minors normally require five to seven courses to be completed in the subject area. Students may double-count courses for credit against both majors and minors. If electives are chosen carefully, minors can easily be integrated into the program requirements. Nearly half of all engineering students have at least one minor, many have two or three.

### 4+1 BEE/MSECE program

Talented undergraduates are urged to apply to the department's 4+1 Bachelor of Electrical Engineering/ Master of Science Electrical & Computer Engineering program. The program allows students to finish both a Bachelors degree and a Masters degree in five years. Students must be accepted into the graduate program, must take 6 of their technical elective credits in 600 level ECE courses acceptable to the ECE graduate program, and must complete all other requirements for the BEE degree. To learn more, see the ECE graduate page in the UD catalog.

## After graduation

On average, 70–80% of graduates with a Bachelor of Electrical Engineering degree choose employment in private industry, government laboratories and agencies, and non-profit research centers. Approximately 15–20% of electrical engineering graduates choose to continue their education toward a master's or Ph.D. degree, and some graduates will opt to attend medical, law, or business school. Students who earn advanced degrees in engineering usually pursue a career in advanced research in industry or academia.

## Career resources

The Career Services Center provides comprehensive services to all matriculated undergraduate students, primarily in the development and implementation of career and educational plans. The Career Services Center can help you determine a major, find internships or full-time jobs, build your resume and cover letter, practice interview skills, apply to graduate or professional school, or network with employers. Visit [www.udel.edu/CSC](http://www.udel.edu/CSC) for details.

## Electrical Engineering Curriculum

### Fall

First Year		
COURSE #	COURSE DESCRIPTION	CREDITS
EGGG 101	Introduction to Engineering (FYE)	2
CHEM 103	General Chemistry	4
MATH 241	Analytic Geometry & Calculus A	4
CISC 106	General Computer Science for EGs	3
	Breadth Requirement Elective 1	3
		16

### Spring

First Year		
COURSE #	COURSE DESCRIPTION	CREDITS
CISC 181	Introduction to Computer Science II	3
PHYS 207	Fundamentals of Physics I	4
MATH 242	Analytic Geometry & Calculus B	4
CPEG 202	Introduction to Digital Systems	3
ENGL 110	Critical Reading and Writing	3
		17

### Second Year

COURSE #	COURSE DESCRIPTION	CREDITS
ELEG 205	Analog Circuits I	4
CISC 220	Data Structures	3
MATH 243	Analytic Geometry & Calculus C	4
PHYS 208	Fundamentals of Physics II	4
		15

### Second Year

COURSE #	COURSE DESCRIPTION	CREDITS
CPEG 222	Microprocessor Systems	4
ELEG 305	Signals & Systems	3
ELEG 309	Electronic Circuit Analysis I	4
MATH 341	Diff Equations w/ Linear Algebra I	3
	Breadth Requirement Elective 2	3
		17

### Third Year

COURSE #	COURSE DESCRIPTION	CREDITS
ELEG 320	Field Theory I	4
ELEG 340	Solid State Electronics	3
MATH 342	Diff Equations w/ Linear Algebra II	3
	Written Communication Elective (a)	3
	Breadth Requirement Elective 3	3
		16

### Third Year

COURSE #	COURSE DESCRIPTION	CREDITS
ELEG 310	Random Signals and Noise	3
ELEG	Foundation Elective I	3
ELEG	Foundation Elective 2	3
	Technical Elective I	3
	Breadth Requirement Elective 4	3
		15

### Fourth Year

COURSE #	COURSE DESCRIPTION	CREDITS
ELEG 498	Senior Design I (DLE)	3
ELEG	Foundation Elective 3	3
	ELEG/CPEG 3xx Technical Elective	3
	Technical Elective 2	3
	Breadth Requirement Elective 5	3
		15

### Fourth Year

COURSE #	COURSE DESCRIPTION	CREDITS
ELEG 499	Senior Design II	3
ELEG 491	Ethics and Impacts of Engineering	3
	ELEG/CPEG 4xx Technical Elective 1	3
	ELEG/CPEG 4xx Technical Elective 2	3
	Breadth Requirement Elective 6	3
		15

**TOTAL CREDIT HOURS: 126**

(a) Written Communication Electives include: ENGL 301, 312, 410, 413

A list of Breadth Requirement courses is available at: [http://www.engr.udel.edu/advise/breadth\\_req.html](http://www.engr.udel.edu/advise/breadth_req.html)

See UD Catalog for course descriptions and a list of technical electives.