



What is Computer Engineering? Computer engineering applies electrical engineering principles to the design of computers, networks of computers or systems of computers and networked devices. Although traditionally part of electrical engineering, computer engineering is now recognized as a separate engineering field.

Major areas of emphasis

To prepare students for a career in this dynamic profession, the Bachelor of Computer Engineering degree stresses the fundamentals on which the profession is built. In addition, we offer a range of technical electives 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, high-performance computing, networking, data search and circuit and system design**. The department offers minors in Bioelectrical Engineering, Cybersecurity, and Sustainable Energy Technology.

Active research in the department 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 computer 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

The pervasive impact of computer engineers:

From heart-rate monitors and refrigerators to laptops and mobile phones, computerized gadgets are everywhere. More and more of these gadgets are communicating and coordinating through networks to massive cloud computing centers that are distributed around the world.

More than CPU designers: Not only do computer engineers design computers and digital equipment, but they also design software that runs on the computers and develop algorithms that are implemented by the software.

Information: Computer engineers work with all aspects of information whether it is voltage levels on a wire, streams of bits moving between mobile phones, files distributed across tens of thousands of servers, or new concepts that are trending on Twitter.

Cybersecurity and Reliability: Computer engineers work to ensure that the systems they design are resilient to hackers, cyber threats and system failures. Computer engineers are at the forefront of today's cybersecurity challenges.

The future: Today's computer engineers brought us the internet in our connected world. How will you change the future as a computer engineer?

Computer engineering overlaps areas of computer information systems, computer science, information science and electrical engineering. It is common for students majoring in computer engineering to complete a minor in Computer Science and Cybersecurity. And because this is an area currently ripe for entrepreneurship, some computer engineers also choose to pursue additional training in business.

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 Bachelor of Computer Engineering/Master of Science Electrical & Computer Engineering

Talented undergraduates are urged to apply to the ECE department's 4+1 BCpE/MSECE 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 BCpE degree. More information about the programs can be found at the ECE graduate page in the UD catalog.

After graduation

On average, 70–80% of graduates with a Bachelor of Computer Engineering degree choose employment in private industry, government laboratories and agencies, and non-profit research centers. Approximately 15–20% of computer 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 for details.

Computer 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
CPEG 323	Intro to Computer Systems EG	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
CPEG 324	Computer Systems Design I	3
CISC 361	Operating Systems	3
	ELEG Foundation Elective I	3
	Breadth Requirement Elective 4	3
		15

Fourth Year

COURSE #	COURSE DESCRIPTION	CREDITS
CPEG 498	Senior Design I (DLE)	3
CPEG 419	Computer Communications Networks	3
	ELEG/CPEG 4xx Technical Elective 1	3
	Technical Elective 1	3
	Breadth Requirement Elective 5	3
		15

Fourth Year

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

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