Why major in Computer Science?

>> Improve human health
>> Advance computer technology
>> Coordinate disaster responses
>> Impact national security
>> Advance weather forecasting
>> Improve communications

From its inception just a half century ago, computing has become the defining technology of our age. Computers are integral to modern culture and are the primary engine behind much of the world's economic growth. Moreover, the field continues to evolve at an astonishing pace, making computer science a vibrant discipline.

Degree options

The Department of Computer and Information Sciences offers two degree options for students studying computer science, as well as a variety of research opportunities and concentrations.

Bachelor of Science in Computer Science (CS-BS)— The CS-BS degree is the most popular major for our students, offering a strong technical education in software development, computer systems, computational applications and computational theory. The curriculum emphasizes real-world applications for programming, theory and computer science practice.

Bachelor of Arts in Computer Science (CS-BA)— Offering a more flexible liberal arts program with a technical focus in computer science, the CS-BA is especially suited for students with more than one major or those who plan to use their undergraduate degree as a springboard toward a professional degree in computer-related law or digital art design.

Undergraduate research is a key opportunity for students to gain experience and prepare for advanced degrees. Students are valued members of the faculty-led research team, often working through independent study or funded research opportunities.

Areas of department research include:
- Artificial intelligence and natural language processing
- Networking
- High performance computing systems
- Multimedia
- Bioinformatics
- Software engineering
- Scientific computing
- Graphics and vision
- Robotics

Concentrations

Within the CS-BS degree program, students are encouraged to explore how other subject areas relate to computer science by creating their own four-course concentration in a related discipline.

Popular concentrations include:
- Management information systems
- Game design
- Networking
- Interactive media
- Artificial intelligence
- Software engineering
- Graphics and vision

Endless career opportunities

Artificial intelligence. Be a leader in designing systems that solve problems intelligently. Algorithms create smart game opponents, learn from examples, cooperate or compete in groups, discover new information in texts, and help people with disabilities communicate.

Software engineering. Design and create software for everything from medical devices to cell phone "apps" to social games. Software Engineer ranks as the best job of 2012, according to this year's Jobs Rated report.

Graphics and vision. Be a part of breakthrough research in computer graphics and vision. Graphics make complex data patterns visible and create wonders on the screen, while vision pertains to the eyes of robots, playing a crucial role in enhancing their intelligence.

Biomedical informatics and computational biomedicine. Understanding disease and searching for cures in the modern biomedical era requires the development of innovative computational tools and algorithms for analyzing a myriad of data in the form of images, genomic sequences, protein and gene expression, vital signs and much more. Be at the cutting edge of research—help transform data into biomedical knowledge.

Computer networking. Become part of the Internet digital revolution that has completely altered our daily lives: smart phones, Internet TV and radio and social networks, transferring billions of bits per second and connecting billions of people anytime, anywhere. Many view computer networking as one of the best and "hottest" career fields available today.

Breadth requirements

The College of Engineering encourages students to take a well-rounded program of study. Breadth requirements include 18 credits of humanities and social sciences selected from an approved course list.

Program highlights

- Excellent classroom teaching: 30% of the CIS faculty are University Excellence in Teaching award winners
- Undergraduate research opportunities (academic year and summers)
- Potential for study abroad earning CIS credit
- A full-time faculty advisor
- Customizable major through the concentration and technical electives
- Service learning opportunity—develop learning games on the XO to broaden participation in computing
- Significant team project experience
- Summer internship opportunities
- Small class sizes (40 or less) in the junior and senior years
- Participation on programming teams (e.g. ACM and Supercomputing)

Advanced degrees

Well-qualified computer and information science majors can pursue several advanced degrees, including:

- Master of Science
- Master of Science in Software Engineering*
- Doctor of Philosophy (Ph.D.)
- Certificate in Computational Science and Engineering

Offered jointly with the Department of Electrical and Computer Engineering

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 Science CS-BS Curriculum
(Please view the CS-BA curriculum in the Undergraduate Catalog online)

Fall

First Year

COURSE #	COURSE DESCRIPTION	CREDITS
EGGG 101	Introduction to Engineering (FYE)	2
CISC 108	Introduction to Computer Science I	3
MATH 241	Analytic Geometry & Calculus A	4
	General Elective 1	3
	Breadth Requirement Elective 1	3
		15

Second Year

COURSE #	COURSE DESCRIPTION	CREDITS
CISC 220	Data Structures	3
CISC 260	Machine Org. & Assembly Language	3
MATH 210	Discrete Math	3
	Laboratory Science 2*	4
	Breadth Requirement Elective 3	3
		16

Third Year

COURSE #	COURSE DESCRIPTION	CREDITS
CISC 360	Computer Architecture	3
CISC 355	Computers, Ethics, & Society***	3
ENGL 312 or 410	Written Communication in Business or Technical Writing	3
CISC 304 or MATH 349	Logic and Programming** or Elementary Linear Algebra	3
	Concentration Elective 1	3
		15

Fourth Year

COURSE #	COURSE DESCRIPTION	CREDITS
	CISC Technical Elective 2	3
	CISC Technical Elective 3	3
	Concentration Elective 3	3
	Breadth Requirement Elective 6	3
	General Elective 2	3
		15

Spring

First Year

COURSE #	COURSE DESCRIPTION	CREDITS
CISC 181	Introduction to Computer Science II	3
MATH 242	Analytic Geometry & Calculus B	4
	Laboratory Science 1*	4
	Breadth Requirement Elective 2	3
ENGL 110	Critical Reading and Writing	3
		17

Second Year

COURSE #	COURSE DESCRIPTION	CREDITS
CISC 275	Introduction to Software Engineering	3
CISC 320	Introduction to Algorithms	3
MATH 205 or MATH 350	Statistical Methods (4 cr) or Probability Theory (3 cr)	3
	Laboratory Science 3 [any science]	4
	Breadth Requirement Elective 4	3
		16

Third Year

COURSE #	COURSE DESCRIPTION	CREDITS
CISC 361	Operating Systems	3
CISC 303	Automata Theory	3
	CISC Technical Elective 1	3
	Concentration Elective 2	3
	Breadth Requirement Elective 5	3
		15

Fourth Year

COURSE #	COURSE DESCRIPTION	CREDITS
CISC 475	Advanced Software Engineering	3
	CISC Technical Elective 4	3
	Concentration Elective 4	3
	General Elective 3	3
	General Elective 4	3
		15

TOTAL CREDIT HOURS: 124

A list of Breadth Requirement courses is available at: www.engr.udel.edu/advise/undergrad_programs.html.
See catalog description for course substitutions and a list of technical electives.

* Lab Science 1 & 2 must be from a single sequence: PHYS 207/208; CHEM 103/104; BISC 207/208; or GEOL GEOL 105/115 & 107
** Or another Math/Science elective pre-approved by your advisor; see www.cis.udel.edu/mathrecommendations
*** CISC 355 can count as a Breadth Requirement Elective from Creative Arts & Humanities