

COMPUTER SCIENCE

The Department of Computer Science at North Dakota State University offers course work leading to bachelor's, master's and doctoral degrees in computer science and, at the graduate level, in software engineering. The Bachelor of Science program was the first in the region to be nationally accredited by the Computing Science Accreditation Board, Inc., later to merge with ABET, Inc.

Background Information

The computer science courses required for the bachelor's degree are usually taught by our regular faculty, all of whom hold a doctoral degree. As an undergraduate student, an advisor is assigned to help in choosing electives in their particular area of interest. For students with no or very limited computer experience, we offer introductory courses in the standard curriculum for majors. Advanced undergraduate students may have the opportunity to take graduate courses while completing their undergraduate program. An extensive and varied set of elective courses in every aspect of computer science is available as well.

The Program

B.A., B.S. in Computer Science. We offer several double majors, including Math and Computer Science, Physics and Computer Science, and Statistics and Computer Science. A 4+1 program is available for undergraduates with a 3.5 grade point average or better to complete a B.S. and an M.S. in five years.

We offer the most comprehensive and varied computer science programs in the region. In the core courses required of all majors, students are offered an opportunity to study concepts, applications and implementation techniques which provide a broad and practical base both for a satisfying, well-paying career in computer science and for advanced study. The curriculum offers an opportunity for an in-depth study of topics such as artificial intelligence, software engineering, cybersecurity, system simulation, computer communication networks, multimedia, operating systems and database management systems. The department is expanding offerings in software engineering, data mining, and bioinformatics. Students are encouraged to choose courses from related areas, such as business, economics, engineering, mathematics, operations research and statistics to broaden their program of study. A senior capstone experience that provides a semester long project for the industry is required and provides an opportunity to add maturity to the computer science skill set before graduation. Starting with the junior year, students may pursue coop and internship opportunities.

Top students are encouraged to inquire about the 4+1 program providing a fast track through graduate school resulting in combined Bachelor's and Master's degrees.

Career Opportunities

Computer scientists choose jobs in government, industry, teaching, research, agriculture, energy and other areas. A 2019 study showed that four of the eleven jobs with the most potential for growth are in areas taught by the Department. Graduates work in systems analysis, cybersecurity, management information processing, databases, software systems, operating systems, process control systems, automation systems, simulation models, new computer design, security, encryption, gaming and development or management.

According to the Federal Bureau of Labor Statistics, software engineers, network systems and data communication analysts, computer scientists and database administrators are expected to be among the fastest growing occupations. Employment of these computer specialists is expected to increase much faster than average. Our programs provide excellent foundations for successful careers in these areas. As an undergraduate student, you will find many opportunities to work part-time as a research assistant on campus, or as a paid intern with a local or regional business.

Graduates of our department have recently accepted employment in major national businesses, including Hewlett-Packard, IBM, AT&T, Apple, CISCO Systems, Google, Echelon, Cargill, SGI, Microsoft, Digikey, John Deere, Target Corp. and Thomson Reuters. Many have chosen positions in North Dakota and adjoining states. There is a large and growing need for computer professionals in North Dakota.

During the final semester of their senior year, students take part in a capstone program. The objective of the capstone program is to provide the students with an experience that brings together the technical knowledge they have acquired while fostering valuable teamwork skills. This is accomplished by working in small teams on real-life projects. Capstone projects are done in conjunction with corporate, industrial or government clients/sponsors. Recent sponsors include 3M, Appareo, ATK, CNSE, IBM, Microsoft, NISC, Noridian, John Deere, Polaris, Rockwell Collins, Sundog, Thomson Reuters, and West Corp.

The Facilities

The department is located in the Quentin Burdick Building along with Information Technology Services. Students have free access to a wide range of computer systems.

Equipment includes running a cluster of Linux workstations, high-end microcomputers, running Windows, Macs, and peripheral equipment including digitizers, plotters and laser printers. The department and the University have assumed a leadership role in computer networking through the acquisition and implementation of high-bandwidth network switches on campus. The University also has entered into a six-state consortium for extremely high-level networking in the Upper Midwest and connectivity to the National Science Foundation supercomputer centers. We are also a charter member of Internet 2 and have connectivity to the national VBNS research network. Residence halls are connected to the campus network, making it easy for students with computers to access remote information for course work and various investigations. The department maintains several Web servers with class assignments and other information which are accessed by thousands of users each day. The University provides more than 600 computers for student use. Internet usage is unlimited for students. In addition, students can make use of free short one to four-hour courses in a wide variety of computer software subjects.

High School Preparation

You should have the basic college preparatory courses in high school. Courses that develop the ability to think logically, to organize and to analyze are especially recommended (e.g., algebra, geometry, trigonometry, statistics and calculus).

Computer Science – Other Plan of Study – visit ndsu.edu/bulletin

Computer Science Plan of Study – Calculus Math Ready

Please note this is a sample plan of study and not an official curriculum. Actual student schedules for each semester will vary depending on start year, education goals, applicable transfer credit, and course availability. Students are encouraged to work with their academic advisor on a regular basis to review degree progress and customize an individual plan of study.

Freshman			
Fall	Credits	Spring	Credits
CSCI 160 Computer Science I	4	CSCI 161 Computer Science II	4
CSCI 189 Skills for Academic Success	1	MATH 166 Calculus II	4
MATH 165 Calculus I	4	ENGL 120 College Composition II	3
Gen Ed Science & Technology and Lab	4	Gen Ed Science & Technology	3
ENGL 110 College Composition I	4	Gen Ed Humanities & Fine Arts/Gen Ed Global Perspectives	3
	17		17
Sophomore			
Fall	Credits	Spring	Credits
CSCI 213 Modern Software Development	3	CSCI 313 Software Development for Games	3
CSCI 222 Discrete Mathematics	3	CSCI 336 Theoretical Computer Science	3
COMM 110 Fundamentals of Public Speaking	3	Gen Ed Social & Behavioral Sciences/Gen Ed Cultural Diversity	3
Gen Ed Social & Behavioral Sciences	3	Gen Ed Wellness	2-3
Gen Ed Science & Technology	3	Elective	3
	15		14-15
Junior			
Fall	Credits	Spring	Credits
CSCI 372 Comparative Programming Languages	3	CSCI 467 Algorithm Analysis	3
STAT 367 Probability	3	STAT 368 Statistics	3
CSCI 366 Database Systems	3	CSCI 374 Computer Organization and Architecture	3
Gen Ed Humanities & Fine Arts	3	ENGL 321 or 324 Writing in the Technical Professions or Writing in the Sciences	3
CSCI Elective I	3	Elective	3
	15		15
Senior			
Fall	Credits	Spring	Credits
CSCI 489 Social Implications of Computers	3	CSCI 415 Networking and Parallel Computation	3
CSCI 474 Operating Systems Concepts	3	CSCI 445 Software Projects Capstone	3
CSCI Elective II	3	CSCI Elective III	3
Additional Elective	3	Additional Elective	6
	12		15
Total Credits: 120-121			

View NDSU equivalencies of transfer courses at: www.ndsu.edu/transfer/equivalencies

For Further Information	
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This publication will be made available in alternative formats upon request. Contact the Office of Admission (701) 231-8643 or 800-488-NDSU or ND Telecommunications Relay Service 800-366-6888 (TTY) or 800-366-6889 (voice).

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