College of Engineering
Computer Science

Overview
Half of all jobs now involve the use of or interaction with computers. This use will continue to increase as computers and mobile devices have become ubiquitous in our lives in areas such as social media, stores, banks, schools, libraries homes and farms.

In spite of their important electronic aspects, computers owe their power to people. People design and program computers. People create application systems. People supply data to and use information from computers.

Professional options
Careers
Career possibilities in computer science are as numerous and varied as the applications for which computers are used. Software engineering and related occupations are forecast to be one of the fastest-growing fields over the next decade. Job opportunities are available in traditional software development and in operational specialties in all areas of the economy: business, banking, communication, manufacturing, agriculture, entertainment, education and government.

Software is everywhere. It controls cars, airplanes, tractors and even medical devices, such as pacemakers. Software not only connects people and information through the internet, but also drives the entertainment industry in areas such as video games, movies, music and animation. It enables scientific research in areas such as developing new drugs to enhance medical care, enabling telemedicine to reach rural communities, implementing the virtual worlds of medical diagnosis and securing mobile and personal medical records. Software integrates geographical information systems, or GIS, and farm machinery to enable precision agriculture.

In short, pick an area of society in which you want to work and contribute, and computer science skills will will open the door to that profession.

Points of pride
The Department of Computer Science is designated as a National Center of Academic Excellence for Research in Cyber-Security by the NSA and DHS. The department has excellent graduate placement and extremely active and competitive student organizations.

Employers
Some of the jobs for computer science graduates:
- Applications developer
- Database administrator
- Information technologist
- Network analyst
- Software developer/architect
- Software engineer
- Systems administrator
- Systems analyst
- Systems programmer
- Web developer

Job experience
Many internships and co-op opportunities are available to students in computer science to gain experience and contacts in the field before graduation. A wide variety of employers recruit students through the All-University Career Fair, Engineering Career Fair and employer-sponsored recruitment events within the Department of Computer Science. Google, Microsoft, Amazon, Garmin, Koch, Tradebot and GE Aviation are just a few of the companies that actively recruit and employ computer science students in both internships and full-time jobs.

A number of on-campus computer science and web development-related jobs are available for students to gain hands-on experience. Faculty members also involve students in research at all levels and research-related positions are often available.

Academics
Degree options
The undergraduate degree in computer science emphasizes a foundation of programming skills, computer science theory, computer organization and mathematics. In addition, students may choose from a variety of technical electives that allow them to focus on theoretical and practical aspects of computing that will prepare them for graduate school or the design, development, operation and maintenance of software systems. Fifteen hours of unrestricted electives allow students the flexibility to pursue interdisciplinary study or to study computer science in greater depth.

Scholars program
The Department of Computer Science provides an opportunity for high-achieving students to pursue opportunities to excel through the Scholars Program. This unique program offers many benefits for the next generation of industry leaders:
- Academic enrichment and professional development opportunities
- Industry networking and mentoring opportunities
- Enhanced scholarship eligibility
- Increased in-depth application of CS theory
- Smaller class sizes and individual instruction

Minors and graduate certificates
The department offers a minor in computer science. The minor is 20 credit hours and includes the core courses in computer science, except CIS 115 Introduction to Computing Science, and CIS 415 Ethics and Computing Technology. The minor also includes courses in logical foundations of programming and computer architecture.

Accreditation
The computer science degree program is accredited by the Computing Accreditation Commission of ABET, abet.org.

Faculty
The department consists of 20 full-time faculty members. The department also includes one university distinguished professor, the highest honor given to a faculty member at K-State. Faculty conduct research programs in areas such as data sciences, cyber-physical systems, distributed systems, programming languages, real-time systems and software engineering. This research is supported by the National Science Foundation, the Office of Naval Research, the U.S. Air Force, U.S. Department of Defense, U.S. Department of Agriculture, U.S. Department of Homeland Security and several industry partners.

Advising
Each student is assigned an undergraduate advisor who helps plan a program of study, develops each semester’s class schedule and helps with any academic or personal problems. Each student also has a faculty mentor who assists with development of future plans and goals and with exploring job opportunities.
Preparation
Problem-solving is an important skill in computer science, so you should pursue any courses that develop this skill. In particular, you should take at least two years of high school algebra, one semester of trigonometry and a course in calculus. It is also important to develop sound communication skills while in high school by taking rigorous composition classes. If your school has a computer science program, you should study problem-solving, programming methodology and a high-level programming language.

Facilities
The department recently moved into Engineering Hall, a new state-of-the-art facility with approximately 108,000 square feet of instructional, research and office space in the heart of the university’s engineering campus. The facility provides world-class classrooms, teaching laboratories and research laboratories for faculty and students.

Lab equipment consists of more than 200 workstations, including PCs, Macs and Linux machines. These stations offer a variety of software engineering and development packages. Additionally, the entire building is wireless.

The department also is home to Beocat, K-State’s super computer. Beocat provides critical computational resources for millions of dollars in research grants and serves more than 200-plus users in departments across K-State.

Additional campus computing facilities are provided by both the College of Engineering and by Information Technology Services. These facilities provide students with exceptional opportunities for hands-on computing experience with a wide range of operating systems and application software.

Activities
Clubs
Students in computer science are encouraged to join computer science societies and clubs for contact with industry professionals and to remain abreast of the latest developments in this fast-growing field. These organizations include

- Association for Computing Machinery (ACM)
- ACM Women in Computing
- Cyber-Defense Club
- Games Development Club
- Google Group
- K-State eSports
- Maker Space Club
- Mobile Development Club

ACM is a professional organization that gives students a chance to interact with peers and faculty while developing professional skills. ACM activities include LAN/Console LAN parties, programming contests and weekly help sessions.

Admission
Incoming students apply to Kansas State University through the general university admissions process. When enrolling in courses, those wishing to declare a major in computer science will be assigned an advisor within the department to help determine which courses in which to enroll.

Admission is selective based on academic performance. Submit application, application fee, all transcripts and ACT or SAT scores postmarked by the priority Feb. 1 deadline. Transfer students will be considered for all terms. Freshmen will be considered only for summer and fall terms.

Financial assistance
The priority deadline for incoming freshmen to submit the K-State scholarship application is Nov. 1, or Feb. 1 for transfer students. Students should submit their Free Application for Federal Student Aid by March 1. For additional details, visit k-state.edu/sfa.

The Department of Computer Science also offers a unique Scholarship for Service, or SFS, program to increase the cadre of cybersecurity professionals that protect the United States’ critical information infrastructure. Participants receive generous stipends in addition to scholarships that fully fund the typical costs that students pay for books, tuition, and room and board for up to three years. For additional details, visit cisa.ksu.edu/sfs.

Suggested coursework
- English and communication (five courses)
- Humanities/social science electives (five courses)
- Mathematics (four courses)
- Statistics (one course)
- Natural science electives (four courses, including a two-semester sequence)
- Economics (one course)
- Unrestricted electives (five courses)
- Advanced required courses (two courses)
- Technical electives (five courses)

Core courses
CIS 115: Introduction to Computing Science
CIS 200: Programming Fundamentals
CIS 300: Data and Program Structures
CIS 301: Logical Foundations in Programming
CIS 308: C/C++ Language Laboratory
CIS 415: Ethics and Computing Technology
CIS 450: Computer Architecture and Organization
CIS 501: Software Architecture and Design
ECE 241: Introduction to Computer Engineering

Advanced required courses
CIS 560: Database System Concepts
CIS 575: Introduction to Algorithm Analysis

Technical electives
You must take one of:
- CIS 505: Introduction to Programming Languages
- CIS 640: Software Testing Techniques

You must take one of:
- CIS 520: Operating Systems I
- CIS 625: Concurrent Software Systems

You must take one of:
- CIS 598: Computer Science Project
- CIS 642: Software Engineering Project I and
- CIS 643 Software Engineering Project II

In addition, you must take one to two additional advanced computing courses.

For more information about computer science, contact:
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Kansas State University
2184 Engineering Hall
1701D Plat St.
Manhattan, KS 66506–2302
785-532-6350
cisoffice@cis.k-state.edu
k-state.edu
engg.k-state.edu

For more information about engineering, contact:
Office of Recruitment
College of Engineering
1141 Engineering Hall
1701D Plat St
Manhattan, KS 66506–5201
785-532-5455
kstateengg@k-state.edu
k-state.edu
engg.k-state.edu

Suggested coursework

KStateEngg

For more information about Kansas State University, contact:
Office of Admissions
Kansas State University
119 Anderson Hall
919 Mid-Campus Dr North
Manhattan, KS 66506–0102
1-800-432-8270 (toll free) or
785-532-6250
k-state@k-state.edu
k-state.edu/admissions

Notice of nondiscrimination
Kansas State University prohibits discrimination on the basis of race, color, ethnicity, national origin, sex (including sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, ancestry, disability, genetic information, military status, or veteran status, in the University’s programs and activities as required by applicable laws and regulations. The person designated with responsibility for coordination of compliance efforts and receipt of inquiries concerning nondiscrimination policies is the University’s Title IX Coordinator: the Director of the Office of Institutional Equity, equity@k-state.edu, 103 Edwards Hall, Kansas State University, Manhattan, Kansas 66506, (785) 532-6200. The campus ADA Coordinator is the Director of Employee Relations, charlott@k-state.edu, who may be reached at 103 Edwards Hall, Kansas State University, Manhattan, Kansas 66506, (785) 532-6277.

Post-Graduation Statistics
k-state.edu/postgrad-stats
kodregistats.org