What can I do with a major in...

Computer engineering

ACTIVITIES COMPUTER ENGINEERING MAJORS DO:
Computer engineers learn about the hardware and software aspects of computer science. They have a solid understanding of circuit theory and electronic circuits. Computer engineering is closely linked with electrical engineering, and is often found in the same department. Many undergraduate programs incorporate most of the core curricula in both electrical engineering and computer science so graduates will be prepared to work in either field. Usual tasks involving computer engineers include writing software and firmware for embedded microcontrollers, designing VLSI chips, designing analog sensors, designing mixed signal circuit boards, and designing operating systems. Computer engineers are also suited for robotics research, which relies heavily on using digital systems to control and monitor electrical systems such as motors, communications, and sensors.

Several specialty areas within computer engineering include:
- Coding, cryptography, and information protection
- Communications and wireless networks
- Compilers and operating systems
- Computational science and engineering
- Computer networks, mobile computing, and distributed systems
- Computer systems for architecture, parallel processing, and dependability
- Computer vision and robotics
- Embedded systems
- Integrated circuits, VLSI design, testing, and CAD
- Signal, image, and speech processing

INDUSTRIES COMPUTER ENGINEERING MAJORS WORK IN (SAMPLE LISTING):
Communication technology  Electronic components  Government safety agencies  Automation
Hardware design  Human genetics engineering  Information technology  Manufacturing
Medical technologies  Open systems control  Hardware manufacturing  Semiconductors
Software development  Software systems  Telecommunications
Computer aided engineering  High speed supercomputers

EMPLOYERS WHO HIRE COMPUTER ENGINEERING MAJORS (SAMPLE LISTING):
Alliant Tech Systems  Nest Labs  General Electric  Unisys  Logic PD
Cisco Systems  Target Corporation  UnitedHealth Group  Cray Inc.  Medtronic
Intel Corporation  Seagate Technology  IBM  Fast Enterprises, LLC  Honeywell
Microsoft Corporation  Symantec Corporation  Sun Microsystems  Cummins Inc.  Ingersoll Rand
Dell Compellent  Emerson Process Management  Graco Inc.  National Instruments  UTC Aerospace

TYPES OF POSITIONS FOR COMPUTER ENGINEERING MAJORS (SAMPLE LISTING):
- Hardware engineer: Researches, designs, develops, and tests computer hardware and supervises its manufacture and installation. Hardware refers to computer chips, circuit boards, computer systems, and related equipment such as keyboards, modems, and printers. The work of computer hardware engineers is very similar to that of electronics engineers except computer hardware engineers work exclusively with computers and computer-related equipment.
TYPES OF POSITIONS FOR COMPUTER ENGINEERING MAJORS (Continued):

- **Software engineer:** Applies the principles and techniques of computer science, engineering, and mathematical analysis to the design, development, testing, and evaluation of the software and systems that enable computers to perform applications. Software engineers must possess strong programming skills, but are more concerned with developing algorithms and analyzing and solving programming problems than with writing code.

- **Network systems and data communications analyst/specialist:** Plans, designs, builds, maintains, and tests networks and other data communications systems.

- **Database administrator:** Organizes, tracks, and stores information for businesses and other organizations. They also design and coordinate database security systems.

**Some of these positions may require an advanced degree.**

USEFUL WEBSITES FOR COMPUTER ENGINEERING MAJORS:

- Department of Electrical and Computer Engineering: ece.umn.edu
- Computer Work: computerwork.com
- Software Developer: softwaredeveloper.com
- Computer Science Unplugged: csunplugged.org
- Computing Careers: acm.org
- Dice: dice.com

USEFUL WEBSITES FOR ENGINEERING MAJORS:

- Engineer.net: engineer.net
- Engineer Jobs: engineerjobs.com
- Engineering Central: engcen.com
- Graduating Engineer: graduatingengineer.com
- ThinkJobs.com: thinkjobs.com
- Engineering.com: engineering.com

PROFESSIONAL ORGANIZATIONS:

- American Association of Artificial Intelligence: aaai.org
- Association for Computing Machinery: acm.org
- NSSN: A National Resource for Global Standards: nssn.org
- Institute of Electrical and Electronics Engineers (IEEE): ieee.org
- IEEE – Computer Society: computer.org
- American Council of Engineering Companies: acec.org
- American Council of Engineering Companies-MN chapter: acecmn.org
- National Society of Professional Engineers: nspe.org
- Minnesota Society of Professional Engineers: mnspe.org
- Society of Women Engineers: swe.org

*Additional job/internship search websites and resources can be found at cse.umn.edu/career.

Information on this page was compiled from the Occupational Outlook Handbook, the Encyclopedia of Careers and Vocational Guidance, University of Minnesota departmental websites, and student-reported data.