

Computer Science

What can I do with a degree in Computer Science?

Computer scientists impact society through their work in many areas. Because computer technology is embedded in so many products, services, and systems, computer scientists can be found in almost every industry. Design of next generation computer systems, computer networking, biomedical information systems, gaming systems, search engines, web browsers, and computerized package distribution systems are all examples of projects a computer scientist might work on. Computer scientists might also focus on improving software reliability, network security, information retrieval systems, or may even work as a consultant to a financial services company.



What additional skills will I need as a Computer Science professional?

Computer scientists should be creative, inquisitive, analytical, and detail oriented. They must have a strong grasp of mathematics, including calculus, probability, and statistics, and computer systems. Preparation in one or more of the sciences, such as, physics, chemistry, biology, is also a requirement. Abilities to work as part of a team and to communicate well also will be important as computer science jobs frequently require interaction with specialists outside of computer science or engineering.

What can I expect during my undergraduate studies in Computer Science?

When enrolled in an undergraduate program in computer science students should expect to take a mix of courses that teach technological, mathematical, and interpersonal skills. Computer science programs may have a focus on hardware or software or a combination of the two.

Sample undergraduate coursework in Computer Engineering may include topics such as:

- Programming
- Programming language theory
- Computer/software architecture
- Digital logic
- Operating systems
- Human-computer interaction
- Algorithms
- Data structures
- Networking
- Software
- Intelligent systems
- Database management
- Requirements analysis
- Security
- Law/ethics
- Risk management
- Probability and statistics
- Calculus
- Discrete mathematics
- Interpersonal communication
- Team projects

How can I start preparing now for Computer Science studies?

There are a number of ways that pre-university students can begin preparing for undergraduate studies in computer science. In terms of coursework, it is extremely helpful to have at least four years of mathematics courses, including Calculus, and two years of science courses. Courses in programming, business, communication, engineering, accounting, and foreign language can also be very useful.

Pre-university students should also consider involvement in out-of-school time activities to further explore their interest in computing. Students' own schools may offer computing activities as a part of afterschool courses or clubs. There are numerous local, national or global competitions, projects, and fairs available which enable students to gain valuable skills and experience in computing. Many local universities have summer or weekend programs designed to provide students with hands-on experience in computing. Some universities even allow pre-university students to take courses that will earn them credit before even entering university. There are also a number of online tools or even courses that allow students to practice computing skills such as programming. More and more pre-university students are also getting involved with internships, volunteer work, or research projects at local universities, non-profits, or businesses to gain experience and connect with other students and mentors.

Additional resources

- [Sloan Career Cornerstone Center's Computer Science site](#)
- [ACM Careers Brochure](#)

References: [ACM 2005] ACM/IEEE-CS Joint Task Force on Computing Curricula, Computing Curricula 2005: The Overview Report, April 2005. (<http://www.acm.org/education/curricula.html>)

Some of the content included in this profile was provided by the [Sloan Career Cornerstone Center](#) (www.careercornerstone.org).

