



## How To Enroll

**STEP 1** You may apply online at [www.cabrillo.edu](http://www.cabrillo.edu). If you have any questions, contact the Cabrillo College Admissions &

Records Office in Building 100 of the Aptos campus located on 6500 Soquel Drive, phone (831) 749-6201; or in Watsonville on 318 Union Street, phone (831) 786-4701.

**STEP 2** You will receive registration information in the mail including your time to begin registering.

## Who May Enroll

Cabrillo College is open to anyone 18 years of age or older, or anyone with a high school diploma or proficiency certificate. High school students also may attend classes at Cabrillo on a limited basis with the permission of their high school principals.

## Nondiscrimination Policy

Cabrillo Community College does not discriminate on the basis of ethnic group identification, national origin, religion, age, sex, race, color, physical or mental disability, or sexual orientation in any of its policies, procedures, or practices. This nondiscrimination policy covers admission and access to, and treatment and employment in, the college's programs and activities, including vocational education programs. Limited English language skills will not be a barrier to admission to and participation in vocational education programs.

## Plan De Acción No Discriminatoria

Cabrillo Community College no discrimina a base de identificación con grupos étnicos, nacionalidad de origen, religión, edad, sexo, raza, color, incapacidad mental o física ni orientación sexual en ninguna de sus reglamentaciones, procedimientos o prácticas. Este plan de acción no discriminatoria incluye la admisión y el acceso a los programas y actividades, y el tratamiento y el empleo en los mismos, incluyendo la educación vocacional. Tener limitadas destrezas en el idioma inglés no constituirá una barrera para ser admitido o participar en los programas de educación vocacional.

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# Computer Science



*"At the university level I had taken a Java class and was completely lost. I also had taken a Java class at another junior college and failed (along with nearly all of the other students) due to the instructor only knowing C++! I came to Cabrillo to get myself up to par and the class here was great. It was easy to follow and my understanding of Java is much better now. Before I only knew C++ and thought Java would be confusing but it wasn't. It was great. I actually enjoy programming in Java now...just like how it was in C++."*

—Dawn Spaulding



## The Profession

Computers are part of almost everything we do, from the GPS systems in the cars we drive to the cell phones and music players we use. Because computers are so much a part of our society, most businesses and other organizations use computers extensively. In fact, many of the most rewarding careers, both financially and intellectually, require a deep understanding of computers and computing.

Computer Science is the study of computers and computing. It is the intelligence and creativity of the computer scientist that is responsible for the technological innovations that have so radically transformed every aspect of our society and our lives.

Computer Science is a fascinating and challenging subject that deals with big questions like, "What is intelligence and can we reproduce it in a machine?" Or, "How do we make sense out of the billions of gigabytes of data on the Internet?" As a computer science student, you will explore these exciting topics and many more.

Computing drives innovation in many areas including business, engineering, entertainment and science. Computer software, the instructions that computer scientists give to computers, have provided the necessary tools to unravel the human genome, research AIDS vaccines and monitor the environment (to mention a few). If you want to make a positive difference in the world, study computing.

# Computer Science

*“Cabrillo’s Computer Science Department is education at its best: instructors with industry experience and broad knowledge of computer technology that want you to succeed. After years of classes at Cabrillo there are still a handful that I want to take and some that I plan to take a second time.”*

— Zeb Nevins  
Computer Science graduate student at UCSC and Cabrillo graduate



Computer Science is much more than programming. Programming is merely the process of translating the procedures we want a computer to execute into instructions it can follow. The more crucial aspect of computer science is determining what we want the computer to do in the first place. Thus, while the knowledge of a language like C++ or Java is important, programming is only one of the tools that allow you to achieve great things with computers.

Computer Science has many sub-fields including: algorithms and data structures, computer graphics, programming language theory, software engineering, computer architecture, databases, artificial intelligence and human-computer interaction. At Cabrillo, you receive the foundation you need to excel in all these areas. Some of these fields are described below.

## Software Engineering

The software that tells the computer how to perform its tasks can be very complex to create and some software takes years to develop. To handle this complexity, software engineers define software requirements, develop software systems, tools, and methods as well as constructing the software for computer applications and systems. They draw on knowledge from fields

such as computer engineering, computer science, management, mathematics, project management, quality management, and systems engineering.

## Computer Engineering

Computer engineering combines elements of electrical engineering with computer science. Computer engineers develop the circuits and hardware for computer-based systems, including the processors at the heart of all computers. As a student in this discipline you will study the designs of digital hardware and software that have led to the development of mobile devices, X-ray machines and even robots.

## Game Programming

As part of game development, the game programmer utilizes his or her computer science skills to create computer graphics and animation displays, to play music and sound effects, to develop intelligence for game characters, and to enable intuitive human-computer interaction. The knowledge and training that a game programmer receives are useful in other industries such as simulation (airplane simulators), telepresence (remote surgery or bomb disposal robots), assistive technology (smart prosthesis), and movie animation and special effects.

## Web Programming

When a Web page designer wants more interactive and dynamic web pages, he or she learns to use client-side and server-side programming languages. On the server, a developer must often design and program databases. The combination of client-side and server-side programming enables many of the newer Web services like Google Maps, Facebook, Twitter, Cloud Computing, Audiogalaxy and IceRocket.

## Career Opportunities

Computer scientists and engineers continue to be in great demand. As businesses across all sectors utilize increasingly sophisticated and complex computer technology in their daily operations, there is a greater need for the expertise of highly-skilled professionals. As a result, there are more jobs created in the U.S. than are transferred offshore.

In fact, good jobs offering a high salary, interesting work and benefits are plentiful in the computer science field. However, to obtain one, you will need to complete a minimum of a bachelor’s degree in the subject area. Most colleges and universities offer degrees in computer science and computer engineering, and Cabrillo College courses transfer to the majority of them. (Please see our course website for more information regarding Cabrillo’s transfer agreements with colleges and universities in California.)

Once you have completed your degree in computer science, a typical career path is software engineering. The U.S. Department of Labor lists computer software engineering, both application and systems software, among the fastest growing occupations in the U.S.<sup>1</sup> The most recent study projects that job growth in that industry will grow by 32% in the ten-year period ending in 2018. In comparison, the average job growth rate for all professions is 8.2% for the same period. Similarly, according to the California Employment Department job growth in the software engineering field in the same ten-year period is estimated to increase by 31.1%, far exceeding the average rate for all occupations of 9.7%.

Because of the high demand for job candidates with a computer science background, careers in com-

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[cabrillo.edu/programs/cs](http://cabrillo.edu/programs/cs)



puter science-related fields are well-paid. The average starting salary for a new computer science graduate is over \$61,000 per year, while the average salary for all computer science professionals is over \$90,000 annually<sup>2</sup>. In comparison, the average salary for all occupations is \$43,460 per year. Thus, as a Computer Science graduate, you can expect to make more than twice the salary of most occupations.

<sup>1</sup> Fastest growing occupations, 2008-18 (latest available), [http://www.bls.gov/emp/ep\\_table\\_103.htm](http://www.bls.gov/emp/ep_table_103.htm)

<sup>2</sup> May 2009 National Occupational Employment and Wage Estimates, [http://www.bls.gov/oes/current/oes\\_nat.htm](http://www.bls.gov/oes/current/oes_nat.htm)