

MAJOR IN COMPUTER SCIENCE



Computer science is about creating innovative solutions to complex, real-world problems. Students in this major study step-by-step computational methods for solving problems by encoding, storing, tracking and transforming information. Computer science is much broader than just programming. It is informed by the theory and architecture of computing devices, and the tools and practices used to design and implement software.

The computer science major at CSU provides students a broad background in the field while simultaneously allowing students to focus on specific areas. We offer the following concentrations:

- Artificial Intelligence and Machine Learning (<https://catalog.colostate.edu/general-catalog/colleges/natural-sciences/computer-science/computer-science-major-artificial-intelligence-machine-learning-concentration/>)
- Computer Science Education (<https://catalog.colostate.edu/general-catalog/colleges/natural-sciences/computer-science/computer-science-major/computer-science-education-concentration/>)
- Computing for Creatives (<https://catalog.colostate.edu/general-catalog/colleges/natural-sciences/computer-science/computer-science-major/computing-for-creatives-concentration/>)
- Computing Systems (<https://catalog.colostate.edu/general-catalog/colleges/natural-sciences/computer-science/computer-science-major-computing-systems-concentration/>)
- Human-Centered Computing (<https://catalog.colostate.edu/general-catalog/colleges/natural-sciences/computer-science/computer-science-major/human-centered-computing-concentration/>)
- Networks and Security (<https://catalog.colostate.edu/general-catalog/colleges/natural-sciences/computer-science/computer-science-major-networks-security-concentration/>)
- Software Engineering (<https://catalog.colostate.edu/general-catalog/colleges/natural-sciences/computer-science/computer-science-major-software-engineering-concentration/>)
- General Computer Science (<https://catalog.colostate.edu/general-catalog/colleges/natural-sciences/computer-science/computer-science-major/computer-science-concentration/>)

The department offers a wide range of specialized senior-level courses where students can explore in depth different areas of computer science including: big data, computer networks, distributed systems, artificial intelligence, machine learning, computational biology / bioinformatics, human-computer interaction, database systems, compilers, parallel

programming, object oriented design, software testing, cybersecurity, blockchain, virtual worlds, and advanced topics in algorithms and theory of computer science.

Learning Objectives

Upon completing this program, students will be able to:

- Understand how to use the principles of computing to design and develop software and computing systems.
- Work effectively in teams to develop computational solutions to complex problems.
- Communicate technical ideas effectively in writing and verbally.
- Practice CS in an ethical and socially responsible manner, with an awareness of biases that can result from their indiscriminate use.
- Confidently pursue graduate studies or professional employment in the field of computer science.

Potential Occupations

Our computer science students and graduates are in high demand. Their proven performance attracts annual recruiting visits by industry, government agencies, and research laboratories. Internships are readily available to enhance students' skills and marketability.

Career opportunities for computer science graduates include:

Software developer, database programmer, computer systems analyst, network architect, web developer, information security analyst, data scientist, computer and information systems manager, IT project manager, cybersecurity analyst, UX designer, cloud engineer, systems architect, mobile application developer, and educator.