

# MAJOR IN COMPUTER SCIENCE, COMPUTER SCIENCE EDUCATION CONCENTRATION

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[catalog.colostate.edu/general-catalog/colleges/health-human-sciences/education/](http://catalog.colostate.edu/general-catalog/colleges/health-human-sciences/education/)) for general information.

Computer science is the study of algorithms and software systems: their theory, analysis, design, efficiency, implementation, maintenance, and application. Computer Science Educators seek to advance the fundamental quality of computer science education by having a deeper understanding on how students learn combined with the complexities of the computational mindset that is developed through computer science.

Computer Science Education students will engage in coursework related to both computer science and education, and their intersection, the growing field of computer science education. Through course work, service learning, and student teaching, this degree will prepare students to enter the field as a K-12 teachers. Furthermore, this degree will serve as preparation for admission into advanced degree programs and college level teaching and research in the field of computer science education.

Course work includes the same core foundation expected of all computer science concentrations, and course work specific to computer science education and teaching standards including web development, software engineering, and networking.

## Learning Outcomes

Upon completing this program, students will be able to:

- Demonstrate proficiency in the areas of software design and development, computing systems, and algorithmic analysis. Students will have a thorough grounding in the key principles and practices of computing, and in the mathematical and scientific principles of computation.
- Work effectively in groups to develop computational solutions to complex problems.
- Communicate ideas effectively, both generally and specifically, with regard to technology and computing.
- Demonstrate strong pedagogical practices related to education and computational thinking.
- Develop lesson plans related to computer science with artifact generation and statistical analysis of artifacts and student performance.
- Demonstrate the variety of fields in which computer science is applied, with direct knowledge in fields relating to the CO Standards for CS Education (algorithms, data structures, web development, networking and security)

## Potential Occupations

Upon completing this program, students can either attend graduate school in computer science, find professional computer-related employment, or directly enter employment as K-12 computer science / technology education teachers.

Students interested in pursuing a teaching license through CSU may refer to the Center for Educator Preparation (<http://www.cep.chhs.colostate.edu/>) and the School of Education (<http://www.soe.colostate.edu/>)