COMPUTER SCIENCE TEACHER EDUCATION (CSTE)

Computer Science Teacher Education Graduate Courses

CSTE 8020 EXPLORING COMPUTER SCIENCE FOR TEACHERS (3 credits)
This course provides a breadth first introduction to computer science for pre-service and in-service teachers. The Exploring Computer Science curriculum (http://www.exploringcs.org) serves as a guiding framework for this course, which introduces domain knowledge and appropriate teaching techniques related to teaching human computer interaction, computational problem solving, web design, programming, data analysis, and artificial intelligence in school environments. The course also covers ethical and social issues in computing along with an overview of computing careers.

CSTE 8030 COMPUTER SCIENCE PRINCIPLES FOR TEACHERS (3 credits)
This course introduces pre-service and in-service teachers to the foundational principles of computer science. It aims to help them learn the essential thought processes used by computer scientists to solve problems, expressing those solutions as computer programs. It prepares them to teach the AP CS Principles course (https://apcentral.collegeboard.org/courses/ap-computer-science-principles) as defined by the College Board. Students explore several different curricula available through College Board endorsed providers.
Prerequisite(s): MATH 1120 or MATH 1130 or MATH 1220 or equivalent with C- or better.

CSTE 8040 OBJECT ORIENTED PROGRAMMING FOR TEACHERS (3 credits)
This course provides an in-depth treatment of the fundamentals of object-oriented programming (OOP) in Java programming language environment. Topics include data types and information representation, control structures, classes and objects, methods, encapsulation, and use of introductory data structures to solve real-world problems. Additionally, this course interleaves coverage of OOP content with discussion of common learner misconceptions and teaching strategies/tools that can be employed to aid learners' mastery of this material. This course prepares students to implement the Advanced Placement Computer Science A curriculum in a secondary school setting.
Prerequisite(s): CSTE 8020 or CSTE 8030.

CSTE 8910 CAPSTONE IN CS EDUCATION (3 credits)
This course will allow graduate students, as an individual or as part of a group, to study and analyze specific problems related to teaching computing in schools. Projects will be concerned with the curriculum and/or instruction of computing and should address a broad scope of application rather than a specific level. (Cross-listed with STEM 8910).
Prerequisite(s): The student must have completed at least 21 credit hours in the Masters of CS Education program.

CSTE 8920 SPECIAL TOPICS IN CS EDUCATION (3 credits)
This course will cover variable content focusing on CS education topics relevant to PK-12 teachers and based on current research trends. New curricula, tools, assessments, programming languages, or related standards may be covered.
Prerequisite(s): Advisor and/or instructor approval.

CSTE 8960 THESIS EQUIVALENT PROJECT IN CS EDUCATION (1-6 credits)
This course allows a graduate student to conduct a research project in computing education. The process for development and approval of the project must include: appointment of supervisory committee (chaired by project adviser), a proposal approved by the supervisory committee, monitoring of the project by the supervisory committee, an oral examination over the completed written product conducted by the supervisory committee, & final approval by the supervisory committee. The approved written project will be submitted to the Office of Graduate Studies by the advertised deadlines. Project credits must be completed over two or more academic terms.
Prerequisite(s): Completion of required Core courses and approval of advisor.

CSTE 8970 CS ED INDEPENDENT STUDY (1-3 credits)
This is a specially designed course taken under the supervision of a graduate faculty member to accommodate the student who has identified a focus of study not currently available in the departmental offerings and who has demonstrated capability for working independently.
Prerequisite(s): Permission of the department and graduate faculty member.

CSTE 8990 THESIS (1-6 credits)
This course is an independent research project completed under the direction of a thesis advisor and required of all candidates pursuing a Master of Science with Thesis option. Thesis credits must be completed over two or more academic terms.
Prerequisite(s): Completion of Required Core Courses and approval of advisor. Not open to non-degree graduate students.