STEM EDUCATION - CERTIFICATE

At both the state and national level, the importance of a technologically literate workforce is essential to meeting the challenges of the 21st Century.

Preparing students for this workforce depends not only on producing high quality science, technology, engineering and mathematics (STEM) majors, but also improving their ability to communicate STEM concepts and work effectively with others. Whether they become doctors, teachers, or engineers, it is imperative that STEM majors are able to work in a variety of collaborative environments. Paramount to creating collaborative environments is recognizing the inherent strengths in embracing diverse perspectives, creating safe and affirming spaces, and valuing social justice and equitable teaching/learning.

The STEM Education Certificate provides STEM majors with skills in how to effectively communicate STEM related concepts, as well as an awareness of discipline-specific approaches to teaching and learning. Students enrolled in the STEM Education Certificate become part of a supportive CU Teach community. They work collaboratively teaching STEM concepts in local elementary and secondary schools and also experience working with youth in programs across campus and in the community. Moreover, the STEM Education Certificate allows students to graduate with a skill set that can be applied in business and industry, while providing them required foundational courses if they choose to complete a secondary mathematics or science teaching license.

The STEM Education Certificate is a collaborative venture between the School of Education, the College of Engineering and Applied Science, and the College of Arts and Sciences and focuses on creating learning environments that support the sharing of diverse perspectives in the process of solving interesting and relevant mathematical, scientific and engineering problems.

Requirements

Student Eligibility

Degree-seeking undergraduate students majoring in math, science or engineering (through Engineering Plus) are eligible to enroll in the STEM Education Certificate. Students must maintain at least a 3.0 GPA in the STEM Education Certificate courses.

Many of the courses included in the STEM Education Certificate are also applicable to the curriculum for obtaining licensure in secondary math or science; thus, students who decide to pursue a STEM secondary teaching license will be able to do so in a timely manner (approximately two additional semesters plus student teaching).

Required Courses and Credits

Code	Title	Credit Hours
Courses and Minimum Required Credit Hours		
EDUC 2035	Designing STEM Learning Environments and Experiences	3-4
or EDUC 2020 & EDUC 2030	Step 1: Inquiry Approaches to Teaching STEM and Step 2: Inquiry-Based Lesson Design	
EDUC 4050	Knowing and Learning in Mathematics and Science	3
Choose two:		6
EDUC 1580	Energy and Interactions	
EDUC 2130	Teaching and Learning Math: Calculus, Trig and Adv Functions	
EDUC 4317	Perspectives on Mathematics	
EDUC/PHYS 4460	Teaching and Learning Physics	
EDUC 4706	Assessment in Mathematics and Science Education	
EDUC/MCDB 4811	Teaching and Learning Biology	
EDUC 4815	Teaching K-12 Mathematics: Number Sense	
EDUC 4821	Teaching K-12 Mathematics: Algebraic Thinking	
EDUC 4822	Teaching and Learning Chemistry	
EDUC 4833	Teaching and Learning Earth Systems	
EDUC 4835	Teaching K-12 Mathematics: Geometry & Measurement	
EDUC 4844	Teaching and Learning Computational Thinking	
EDUC 4850	Teaching K-12 Mathematics: Probability & Statistics	
GEEN 4400	Teaching Design	
Total Credit Hours		**12-13**

In addition to the required courses listed above, students must complete a total of 15 hours in various STEM education and outreach institutions that partner with CU Teach (Possible collaborators/venues include tutoring in BVSD, SVVSD, CU Science Discovery, CU Fiske Planetarium, WOW! Children's Museum, Destination Imagination, Butterfly Pavilion, and Science Fair judging). Students may propose their own partnership/collaboration (future or in the past) for approval by a co-chair of CU Teach.

Learning Outcomes

- Understand disciplinary-specific approaches to STEM.
- Effectively communicate STEM related concepts in educational, business and industry settings.
- Apply for the secondary licensure program.