

Elementary STEM Endorsement Course Overview

Data Analysis and Problem-Solving

Course Description:

This course will develop a firm problem-solving foundation. Using skills and strategies applied in mathematical contexts practicing teachers will learn to think, work with others, present solutions orally to the whole class, and write up detailed solutions. This course will also provide practicing teachers a deeper understanding of probability and data representation and analysis. Special attention in this course will be given to children's typical error patterns, problem solving strategies, interpreting and assessing students' work and learning, and integration of the NCTM process standards and the Standards for Mathematical Standards.

Energy in STEM for Elementary Teachers

Course Description:

This course provides teachers with a deep and useful understanding of energy and the nature of how students use concepts of energy to make sense of phenomena across life, earth, and physical science. This understanding enhances teacher insights into: 1) how matter and energy interact, 2) the relationships of energy to forces and interactions within fields, and 3) pedagogical content knowledge around teaching and learning about energy. The course provides teachers with knowledge of how energy concepts may be used by students with the Crosscutting Concepts, and Engineering and Science practices.

Force in STEM for Elementary Teachers

Course Description:

This course provides teachers with a deep and useful understanding of force and the nature of how students use concepts of force to make sense of phenomena across life, earth, and physical science. This understanding enhances teacher insights into: 1) how force, matter and energy interact, 2) the relationship of force to energy and interactions within fields, and 3) pedagogical content knowledge around teaching and learning about force. The course provides teachers with knowledge of how concepts of force may be used by students with the Crosscutting Concepts, and Engineering and Science practices.

Matter in STEM for Elementary Teachers

Course Description:

This course provides teachers with a deep and useful understanding of matter and the nature of how students use concepts of matter to make sense of phenomena across life, earth, and physical science. This understanding enhances teacher insights into: 1) how matter and energy interact, 2) the relationships of matter to forces and interactions within fields, and 3) pedagogical content knowledge around teaching and learning about matter. The course provides course participants with knowledge of how matter concepts may be used by students with the Crosscutting Concepts, and Engineering and Science practices.

Nature of Science and Engineering

Course Description:

In this course participants will experience introductory explorations of the nature of science using science and engineering principles, practices, and processes. Applications to Science, Technology, Engineering and Mathematics will be explored using learner-based pedagogy. Participants will develop teaching practices to assist them in educating K-6 students in selected Earth and Life Science Standards.

STEM Practices with a focus on technology and problem-based learning

Course Description:

The STEM Practices course will engage participants in developing meaningful understandings of problem-based approaches to teaching, learning, and the integration of STEM practices across the curriculum using appropriate technology. Participants will demonstrate their skills through the development and creation of a problem-based, hands-on experience.