



STEM Education (STEM ED)

Courses

STEM ED 160. Integrative Physical Science for Elementary. 4 Credits.

A conceptual physical science course intended for elementary education majors. Topics include the study of the structure and properties of matter, interactions and energy, interactions and forces, interactions and systems (electricity and magnetism), and the study of waves (including light and sound). This course includes exploration of PLTW Launch Modules and other hands-on activities.

Typically Offered: Fall, Spring, Summer.

STEM ED 199. Special Topics. 1-4 Credits.

Courses not offered in the regular catalog that provide an opportunity to extend student learning.

Typically Offered: On sufficient demand.

Repeatable: Up to 12 Credits.

STEM ED 306. Inventions and Innovations - Technology Education for Children. 3 Credits.

An elementary course focused on technology and society, invention and innovation, engineering for children, evaluating available integrated STEM curricula, as well as exploring methods for the implementation of integrated STEM activities in the elementary classroom. The course includes a lab component.

Typically Offered: Fall.

STEM ED 310. Design, Technology and Engineering for Children. 3 Credits.

An elementary course focused on technology and the engineering design process, as well as methods for integrating STEM activities in elementary school curriculum. The course includes a lab component.

Typically Offered: Spring.

STEM ED 331. Innovation and Engineering Design. 3 Credits.

Prepares prospective teachers to teach engineering design concepts to understand how criteria, constraints, and processes affect designs. Activities include brainstorming, visualizing, modeling, constructing, testing, and refining designs. This course includes embedded lab activities to support learning content and the application thereof.

Typically Offered: Fall.

STEM ED 342. Data Collection and Analysis. 3 Credits.

A course focused on hands-on transdisciplinary labs using project-based engineering design activities that focus on the collection and analysis of lab data to solve real world problems. Activities include data graphing, charting, tables, sketching, modeling, constructing, testing, and refining designs.

Typically Offered: Summer.

STEM ED 355. STEM Curriculum and Methods for Elementary. 3 Credits.

Foundational course for fully implementing effective elementary-level STEM (Science, Technology, Engineering, and Mathematics) Education. Reviews and explores current trends in STEM Education using PLTW Launch Modules and other standards-based education curricula. Students also examine interdisciplinary methods for successfully engaging students in Reading, Science, Math, Art, and other elementary subjects.

Typically Offered: Spring.

STEM ED 411. STEM Curriculum and Methods. 3 Credits.

This course is designed to prepare students to teach courses in program areas like STEM, technology education, and CTE technology and engineering education. Students will learn instructional planning techniques, curriculum development, methods, and how to properly integrate instruction in the classroom, lab, shop, or other workspace.

Typically Offered: Fall.

STEM ED 431. Design for Engineering. 3 Credits.

This course is designed to provide prospective teachers with experience in Project-Based Learning (PBL) using the Engineering Design Process (EDP). Students will examine engineering practices related to analytical and physical modelling to design, build, modify, test, and demonstrate in a virtual and real-world environment. Students are introduced to virtual simulations, 2D and 3D Modeling Techniques, and other elements of design. At course conclusion students will be familiar with the iterative process engineers use to create design solutions. This course includes embedded lab activities to support learning and application.

Typically Offered: Fall.

STEM ED 450. Engineering the Future Using Computational Thinking. 3 Credits.

This course examines the use of computational thinking in technology, or how problems and their solutions can be formulated to be effectively executed by a computing platform. Students develop the skills to break problems into smaller parts, identify patterns, focus on the relevant details of a problem, and think of solutions to problems in an algorithmic fashion. This course includes embedded lab activities to support learning content and the application thereof.

Typically Offered: Spring.

STEM ED 499. Special Topics. 1-4 Credits.

Courses not offered in the regular catalog that provide an opportunity to extend student learning.

Typically Offered: On sufficient demand.

Repeatable: Up to 12 Credits.