

# STEM Education

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## College of Education

The mission of the Department of Science, Technology, Engineering, and Mathematics (STEM) Education is to engage in innovative scholarship, teaching, and service that contributes to improving the quality of P20 science, technology, engineering, and mathematics education in the Commonwealth, the nation, and the world. Faculty members in the department are committed to improving the lives of Kentuckians through scientific literacy, mathematical literacy, and technological literacy from preschool through graduate school and beyond. Faculty members have expertise in a diverse spectrum of specialties relating to research, teaching, and service in STEM Education, and have developed curricula that are widely disseminated locally and nationally. They conduct research on STEM Education issues, conceptual understanding in STEM education, curriculum implementation and teacher professional development. In addition, faculty members have developed a variety of novel courses in STEM Education to foster problem solving, critical thinking, and innovation in STEM Education. The department offers both master and doctoral programs in STEM Education with the flexibility of focusing on a specific discipline (i.e., mathematics education, science education), or a broader focus on STEM Education.

### Master of Science

The Department of STEM Education offers programs leading to a Masters of Science in STEM Education and offers a strand option in the Education Sciences PhD program (see Education Sciences for more info). The MS in STEM Education program is a 30-hour program designed to prepare candidates for advanced roles in K-12 educational settings in the STEM content areas or for a terminal degree route in a STEM Education field. Full-time students in the STEM Education graduate programs are not required to serve in a funded assistantship, but those interested are eligible for the positions available. Part-time enrollment in the program is allowed and the program can be completed in evening hours.

### Admission Requirements

Admission to the MS in STEM Education program requires completion of a bachelor's degree from an accredited institution of higher education. While this degree does not have to be specific to a STEM Education field, the applicant does need to have strong content knowledge and an interest in the STEM field as evidenced by the rest of the application materials. The applicant must have adequate GRE scores, GPA of at least 2.75 at the undergraduate level and 3.0 at the graduate level, transcripts from previous institutions, a statement of career goals, and three letters of recommendation. The TOEFL is required for students in which English is not their first language. Once the application has been reviewed, applicants will be required to participate in an impromptu writing sample and interview with STEM Education faculty before a final admission decision is determined.

### Doctor of Philosophy

The Department of STEM Education offers a PhD program through the Education Sciences Interdisciplinary PhD. For more information, see the information on Education Sciences in the Graduate Bulletin or contact the Director of Graduate Studies or Department chair for the Department of STEM Education.

### Graduate Courses

The department offers a variety of coursework in order to design a degree program that best meets the needs of the students in the program. Each student in the MS in STEM Education program is required to complete 12 hours of a specialization in a STEM content area (non-STEM Education courses). With the

addition of 6 hours of electives, candidates in the program can acquire 18 hours of graduate coursework in a content area to meet the minimum guidelines needed to teach college-level courses in that content area. The remaining 12 hours of the program are dedicated to STEM Education coursework with the following courses as options:

SEM 504	Designing Project-Enhanced Environments In STEM Education	(3)
SEM 603	Curriculum And Instruction In STEM Education (Required)	(3)
SEM 604	History Of STEM Education	(3)
SEM 610	Effective Use Of Technology For Modeling-Based Inquiry In STEM Education	(3)
SEM 620	Equity In STEM Education	(3)
SEM 670	Advanced Elementary Mathematics Methods	(3)
SEM 674	Advanced Studies In Teaching Elementary School Science	(3)
SEM 575	Mathematics Clinic	(3)
SEM 701	History Of Mathematics Education	(3)
SEM 706	Research In STEM Education	(3)
SEM 708	Engineering In STEM Education	(3)
SEM 770	Special Topics In STEM Education	(3)