

EDUCATION: STEM - MA

Over the past fifteen years St. Catherine University and the National Center for STEM Elementary Education have been offering licensure candidates and practicing teachers expert professional growth in STEM content areas. All K-6 licensure students are required to have a STEM Certificate as part of their degree, and we have been honing a model of teacher professional development and graduate coursework that leads to transformational changes in teacher practices.

In the MAED: STEM master's program, participants choose from a menu of courses in four different focus areas: STEM Integration practices, Computer Science Integration, Engineering or Math, and Science. Courses facilitate inquiry-based hands-on learning across the curriculum. The STEM MAED affords teachers up to six courses from the STEM content area.

External research has found that K-8 students taught by graduates of our STEM certificate or MAED experienced improved STEM identities, and teachers improve in their confidence, competence, and comfort with teaching STEM content and skills. Access to high-quality STEM instruction improves the likelihood that student will choose post-secondary studies or career options in related fields.

STEM courses are taught by faculty with both K-12 STEM teaching background and research in a STEM field.

The STEM MAED is a balanced blend of scholarship, research, and application that makes our graduates better educators and leaders in their communities. All student's research projects are publicly available in the St. Kate's Sophia Database (<https://sophia.stkate.edu/maed>). These action research projects are downloaded by teachers and scholars around the world to help improve their teaching--scroll to the bottom of the page to see a livestream of downloads in process.

Curriculum

The 31-credit MAED: STEM program allows students to choose from a menu of courses. In addition to the 13 required course credits, students select at least 12 credits (four courses) with a STEM focus (students must select at least one course from three of the four STEM focus areas). Students select the remaining six elective credits from STEM, Technology Integration, or Curriculum and Instruction courses.

Code	Title	Credits
Required Courses		
EDUC 6000	Becoming Scholars: Evidence-Based Best Practice	3
EDUC 6420	Technology Integration Fundamentals	3
EDUC 6670	Introduction to Action Research	3
EDUC 6760	Integration Seminar	3
EDUC 8920	Action Research Project	1
Select 18 focus area credits. At least one course must be selected from each of the four STEM areas listed below. The six additional credits may be selected from the courses listed below or courses offered in the MAED Curriculum and Instruction or MAED Technology Integration programs (see course listings in this catalog)		18
STEM integration courses		

EDUC 6225	Literacy through STEM: Using Reading, Writing, Listening and Speaking as Tools in STEM
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EDUC 6815	The Art of STEM
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EDUC 6825	Citizen Science as Service Learning in the Natural World
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EDUC 6827	SySTEMic Integration - Transforming K-6 Education through STEM Instruction ¹
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Science courses

EDUC 6805	The Outdoor Classroom ¹
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EDUC 6812	Foundations of Environmental Chemistry
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EDUC 6860	Elementary Earth Science - Understanding the Ground Upon Which We Stand ¹
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Technology Integration courses

EDUC 6710	Introduction to Computational Thinking and Coding
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EDUC 6730	Physical Computing: Introduction to Arduinos
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EDUC 7025	Ethics in the Information Age
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EDUC 7690	Hands on STEM: Maker Space in the K-8 Setting
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Math/Engineering courses

EDUC 6123	Making Data Meaningful
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EDUC 6820	Engineering Basics
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EDUC 6835	Engineering and Mathematics
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EDUC 6855	Hands on STEM: Basic Engineering and Alternative Energy ¹
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Total Credits	31
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¹ These courses may include two to four required weekend face-to-face sessions on campus in St. Paul, MN

Note: St. Kate's will accept 12 credits from the University of St. Thomas' Center for Engineering STEM Engineering Education Certificate into this program. Contact the program director for details.