Master of Science in Education in Secondary STEM Education

The program of study is guided by the principle that the craft of teaching involves the exercise of multiple competencies at the same time. Thus, the curriculum consists of "challenges": scenarios based on thematic problems of teaching practice that involve learning objectives drawn from multiple competencies. As teacher candidates (TCs) progress through the program, solution requirements for challenges increase in authenticity (analyze, design, role play, implement with students) and complexity (duration of learning activity and number of students involved). TCs must justify their choice of instructional, assessment or classroom culture strategies, using the science of learning and applying a critical lens. They must plan, collect and analyze evidence of student learning. Design portfolios are used to assess TC's learner-centered design process skills.

In addition to all University requirements for admission to graduate studies, applicants to the Curriculum and Instruction Secondary STEM Education M.S.E. competency-based program must provide and/or meet all the following:

A 1-2 page personal statement describing how the applicant envisions using the degree after it is earned and expectations for future contributions to the education field.
2 letters of recommendation, attached to the recommendation form by the recommender when the recommendation is submitted online.
At minimum, a bachelor's degree in an area of science, mathematics, technology or engineering or equivalent from a regionally accredited institution or from a foreign university with substantially equivalent bachelor's, master's, or doctoral degree requirements, and/or extensive working experience in STEM areas.

A minimum GPA of 2.5 in the content area or equivalent for which licensure is sought.
An applicant with a bachelor's GPA that does not not meet the minimum requirements may be considered for admission upon review of overall credentials.

NOTE: Candidates who wish to enter the Restricted License Pathway are required by the Kansas State Department of Education to have a GPA of 2.75 from the last 60 semester credits hours of college coursework completed.

Competency Work Requirements

This competency-based program is not course-based. There are 7 "domains" within this program, each with its own competencies. The domains are:

- Domain A - Assessing Learning
- Domain B - Designing for Deeper Learning
- Domain C - Meeting Individual Needs
- Domain D - Learning in Community
- Domain E - Grounding Instruction in the Science of Learning & Development
- Domain F - Transforming the Classroom
- Domain G - Professional Learning

Each group below is a set of competencies drawn from the various domains, and reflects an intended sequence and increase in complexity.

Code	Title	Hours
Group 1		
CT-C 740	Building a Community of Trust (Domain D)	1
CT-C 741	Understanding Backwards Design (Domain B - Co-enrollment in CT-C 742 is recommended.)	1
CT-C 742	Individualized Learning: Agency, Motivation, Interest (Domain C - Co-enrollment in CT-C 741 is recommended.)	1
CT-C 743	Research-informed Practices (Domain E)	1
Group 2		
CT-C 744	Relating to Students (Domain C)	1
CT-C 745	Curriculum Analysis (Domain F)	1
CT-C 746	Defining Outcomes (Domain A - Co-enrollment in CT-C 747 and CT-C 748 is recommended.)	1
CT-C 747	Designing Short-Term Learning Experiences for Deeper Understanding (Domain B - Co-enrollment in CT-C 746 and CT-C 748 is recommended.)	1
CT-C 748	Individualized Learning: Differentiate, Scaffold and Extend (Domain B - Co-enrollment in CT-C 746 and CT-C 748 is recommended.)	1
Groups 1 & 2 must be completed before the practicum experience and beginning Groups 3 and 4 competencies.		
Group 3		
CT-C 749	Individualized Learning: Universal Design for Learning (Domain C)	1
CT-C 750	Individualized Learning: Multilingual Learners (Domain C)	1
Group 4		
CT-C 751	Thinking Like a Designer (Domain G)	1
CT-C 752	Assessing for Learning (Domain A)	1
CT-C 753	Leading Collaborative Learning - Discussion (Domain D)	1
Group 5		
CT-C 754	Designing Evidence-Based & Responsive Learning Experiences (Domain B)	1
CT-C 755	Leading Collaborative Learning - Groupwork (Domain D)	1
CT-C 756	Defining "Future-ready" Outcomes (Domain A - Co-enrollment in CT-C 757 is recommended.)	1
CT-C 757	Designing for Disciplinary Learning (Domain B - Co-enrollment in CT-C 756 is recommended.)	1
Group 6		
CT-C 758	Assessment of Learning (Domain A)	1
CT-C 759	Partnering with Caregivers (Domain D)	1
Anytime		
CT-C 760	Productive Instructional Strategies (Domain E)	1
CT-C 761	Supportive Environments (Domain E)	1
CT-C 762	Social and Emotional Learning (Domain E)	1
CT-C 763	Context of STEM Teaching and Learning (Domain F)	1
CT-C 764	Transforming Classroom Practices and Policies (Domain F)	1
CT-C 765	Practicing Like a Designer (Domain G)	1

CT-C 766	Learning to Improve (Domain G)	1
CT-C 767	Evaluating Educational Technology Tools (Domain G)	1
Program Level Competencies		
CT-C 768	Designing for Synthesis and Transfer (Domain B)	1
CT-C 769	Collaborating for Change (Domain G)	1
Total Hours		**30**

At the completion of this program, students will be able to:

- Apply research-based approaches from the Science of Learning and Development to support the academic and multidimensional development of all learners.
- Design learning experiences grounded in the central concepts, inquiry practices, and structures of the discipline(s) so students can cultivate discipline-specific habits of mind and connect disciplinary content knowledge and practices to real-world contexts.
- Provide a variety of opportunities for learners to productively engage with content and express their understanding based on an understanding of learners' experiences, interests, learning needs and language development.
- Create, model and guide students in upholding community standards of conduct that foster an environment of trust, belonging and safety that supports individual and collaborative learning.
- Evaluate and revise lessons and units as well as classroom policies and practices by attending to society's influence on their discipline, their learners' experiences and the role of educators and schools.
- Create learning outcomes that align with external standards, design tasks that assess learners' understanding in a variety of ways, and provide meaningful feedback to orient learners towards targeted outcomes.
- Continuously improve their practice through design thinking, collaboration with colleagues, and deliberate engagement with technology and professional development opportunities.