

**PhD in Learning and Teaching in STEM  
Program Area of Study: Science Education**

**Sample Curriculum Display TOTAL HOURS = 60 (minimum) after Master's Degree\***

**Graduates of our programs become nationally recognized leaders in science education and related fields as science teacher educators, informal educators, curriculum supervisors, community college and higher education science faculty, science education researchers, and evaluators.**

**PhD Core Courses                    minimum of 30 hours**

<b>PAS COURSES</b>	
<b>Program Area of Study: Science Education - 12 hours</b>	
EMS 732 Theoretical and Critical Perspectives of Science Education	3
EMS 775 Foundations of Science Education	3
EMS 832 Research Applications in Science Education	3
EMS 851 Internship in Mathematics and Science Education	3
<b>Specialty Courses - 12 hours</b>	
Specialty Courses (deepen understanding in focus area) Science Education PhD requires 18 master's level science courses minimum from all graduate work. This may be waived by the committee if determined to be sufficient based on previous Master's coursework and sufficient hours, and if the total number of required hours are reached. Take graduate courses (500 or above level) that deepen or broaden your understanding of issues related to the focus of your research and grade level, and future career interests. Courses should be chosen in consultation with your advisor.	12
<b>Learning and Teaching in STEM Education Department Required Courses - 6 hours</b>	
STEM Education 1: <i>EMS 794 Foundational Learning Theories in STEM Education</i> (Spring)	3
STEM Education 2: <i>EMS 791 Contemporary Research and Critical Issues in STEM Ed</i> (Fall)	3

**College-Required Courses                    minimum of 21 hours**

<b>Scholar Leaders Courses (College of Education Required Courses) - 6 hours</b>	
Scholar Leader 1: <i>ED 755 Diversity and Equity in Schools and Communities</i>	3
Scholar Leader 2: <i>ED 756 Systemic Change in Education</i>	3
<b>Required College Research Methods - 15 hours</b>	
Two intro course in research methods: ED 710 Applied Quantitative Methods in Education, or its equivalent (e.g., ST 507/511) ED 730 Qualitative Methods or its equivalent	6
EMS 731 Fundamentals of Research in Science Education	3
One advanced course in research methods: ED 711 Applied Quantitative Methods in Education II (or its equivalent, ST 508/512) Or	3

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ED 731 Advanced Qualitative Research and Data Analysis in Education  Or  ED 750 Mixed Methods Research in Education	
Additional course options: <ul style="list-style-type: none"> <li>• EDP 560 Educational Tests and Measurements</li> <li>• ED 712 Survey Methods in Educational Research</li> <li>• ED 795 Special Topics in Education Research</li> <li>• ST 505 Applied Nonparametric Statistics</li> <li>• Other Research Methods Courses in the College of Education, Engineering, Statistics, or Psychology at the level 500 or above</li> </ul>	3

**STEM Ed PhD Dissertation Hours    minimum of 9 hours**

<b>Dissertation Hours</b>	
EMS 895 Doctoral Dissertation Research	9

**NOTE:** For doctoral students either part-time or full-time who are working on their dissertation.

Writing the dissertation requires a major commitment of time and effort on both the part of the doctoral student and the faculty advisor. There should be consultation between the student and the dissertation chair about what is expected to be accomplished, and how much time is to be invested before the student registers. The College of Education strongly recommends that students who are registering for dissertation research (895) or preparation (899) register for at least 3 semester hours per semester, when appropriate.

- Highly qualified applicants without a Master’s degree may be admitted directly into the PhD program, and must meet the requirements for the Master’s degree en route.