# Learning and Teaching in STEM (PhD): Science Education

## Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>College Scholar Leader Core Courses</strong></td>
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<tr>
<td>ED 755</td>
<td>Scholar Leader: Diversity and Equity in Schools and Communities</td>
<td>6</td>
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<tr>
<td>ED 756</td>
<td>Scholar Leader: Systemic Change in Education</td>
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<td></td>
<td><strong>College Research Methods Courses</strong></td>
<td>15</td>
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<td></td>
<td>Required Introductory Research Methods Courses</td>
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<tr>
<td>ED 710</td>
<td>Applied Quantitative Methods in Education I</td>
<td>6</td>
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<tr>
<td>ED 730</td>
<td>Introduction to Qualitative Research in Education (or equivalent)</td>
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<td><strong>Advanced Research Methods Courses (Select one course from the list below)</strong></td>
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<tr>
<td>ED 711</td>
<td>Applied Quantitative Methods in Education II</td>
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<tr>
<td>ED 731</td>
<td>Advanced Qualitative Research and Data Analysis in Education</td>
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<td>ED 750</td>
<td>Mixed Methods Research in Education</td>
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<td><strong>Advanced Research Electives</strong></td>
<td>6</td>
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<td>Select two courses from the list above or other advanced research methods courses approved by the student advisor.</td>
<td>6</td>
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<td></td>
<td><strong>Dissertation Research</strong></td>
<td>9</td>
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<tr>
<td>EMS 895</td>
<td>Doctoral Dissertation Research</td>
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1. Students may also select from a design-based research course or courses in the Department of Statistics or Psychology at the level 500 or above (e.g., ST 505, PSY 880) approved in conjunction with the academic committee.

## Science Education

<table>
<thead>
<tr>
<th>Code</th>
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<th>Hours</th>
<th>Counts towards</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Required Learning and Teaching in STEM Education Core Courses</strong></td>
<td>6</td>
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<tr>
<td>EMS 791</td>
<td>Contemporary Research and Critical Issues in STEM Education</td>
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<tr>
<td>EMS 794</td>
<td>Special Problems in Science Teaching</td>
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<td></td>
<td><strong>Science Education Specific Courses</strong></td>
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<tr>
<td>EMS 732</td>
<td>Theoretical and Critical Perspectives of Science Education</td>
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<tr>
<td>EMS 775</td>
<td>Foundations Of Science Education</td>
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<tr>
<td>EMS 832</td>
<td>Research Applications in Science Education</td>
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<tr>
<td>EMS 851</td>
<td>Internship In Mathematics and Science Education</td>
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</table>

2. 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. Students will take graduate courses (500 or above level) that deepen or broaden their understanding of issues related to the focus of their research and grade level, and future career interests. Courses should be chosen in consultation with an advisor.