



Science, Technology, Engineering, and Mathematics Education (TCHLRN-PH, STE)

Specialization leading to Doctor of Philosophy in Teaching and Learning

Core Requirements (20 hours)

Teaching and Learning Required Courses (choose two, 8 hours)

EDUTL 8003	Theorizing and Researching Teaching and Learning (4)
EDUTL 8015	Diversity and Equity in Education (4)

Research Requirement (choose three, 9 hours)

Take a minimum of 9 semester hours of research methods. Choose a qualitative focus, a quantitative focus, or a combination. Recommended courses are listed below. Students may select courses from beyond this list with the approval of the advisor and the Graduate Studies Committee

Qualitative

EDUTL 7431	The Ethnography of Communication 1 (3)
EDUTL 7432	The Ethnography of Communication 2 (4)
EDUTL 8001	Discourse Analysis and Educational Research 1 (4)
EDUTL 8002	Discourse Analysis and Educational Research 2 (4)
ESQUAL 8280	Qualitative Research in Education: Paradigms, Theories, and Exemplars (3)
ESQUAL 8290	Qualitative Research in Education: Methods and Analysis (3)

Quantitative

ESQREM 6625	Introduction to Educational Research (3)
ESQREM 6641	Introduction to Educational Statistics (3)
ESQREM 7627	Sampling Designs and Survey Research Methods (3)
ESQREM 7648	Univariate Experimental Design (3)
ESQREM 8648	Multivariate Experimental Designs (3)

Breadth Requirement (choose one, 3 hours)

Take at least one course outside of specialization but within in Teaching and Learning.

EDUTL	Breadth Requirement (3)
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Minimum hours
post-MA/MS: 56

For More Information:
Office of Academic Services
Department of Teaching
and Learning
227 Arps Hall
1945 North High Street
Columbus, OH 43210
614-292-2332

tl-academicservices@osu.edu

Specialization Requirements (24 hours)

Students must meet with a faculty advisor within the first two semesters to plan a program of study. With the approval of a faculty advisor and the Graduate Studies Committee, the program of study may deviate from the curriculum below depending on scholarly and research interests.

Required Courses (15 hours)

EDUTL 8711	Current Issues and Trends in STEM Education (3)
EDUTL 8721	Advanced Study of Thinking, Learning, and Assessment in Mathematics Education (3)
EDUTL 8731	Teaching & Teacher Education in STEM Education (3)
EDUTL 8741	History of Curriculum in STEM Education (3)
EDUTL 8751	Survey and Critical Analysis of Research in STEM Education (3)

Supporting Courses (choose three, 9 hours)

EDUTL 7715	Learning Progression in Mathematics Education (3)
EDUTL 7716	Conceptual and Procedural Knowledge in Mathematics Education: Theory, Research, and Controversy (3)
EDUTL 7723	Learning Progressions in Science Education (3)
EDUTL 7725	The Nature of Science and Implications for Science Teaching (3)
EDUTL 7731	Multimedia Tools for STEM Education (3)
EDUTL 7741	Advanced Study of Learning and Cognition in STEM (3)
EDUTL 7742	Knowledge Representations in STEM Learning (3)
EDUTL 7746	Integrating Teaching, Learning and the Brain: Processing Information (3)
EDUTL 7747	Science, Mathematics, Technology and the Educated Mind (3)
EDUTL 7748	Engaging Community & Culture to Teach STEM (3)
EDUTL 7749	History, Future, and Practical Applications of Concept Inventories in STEM Education (3)
EDUTL 6892	Special Topics in Education (3)
EDUTL 8890	Advanced Seminar (1-4)
FABENG 7220	College Teaching in Engineering (2)

Research Apprenticeship (6 hours)

EDUTL 8998	Research Apprenticeship in Teaching and Learning (2-8)
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Candidacy Examinations

Students must be registered for at least 3 graduate credits during the semester in which the candidacy examination is completed. These need not be additional, Individual Study hours.

EDUTL 7193	Individual Studies (1-15)
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Dissertation Research (6 hours)

EDUTL 8999	Research (1-15)
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Note: Students exact curriculum may vary depending upon program of study determined by student and advisor, and approved by the Graduate Studies Committee.