Mathematics Education PhD Program at Ohio University

Ohio University offers a PhD in Curriculum and Instruction with a specialization in Mathematics Education. This program develops scholars who study teaching, learning, and assessment in mathematics—kindergarten through college. The program prepares these scholars to act as stewards of the field of mathematics education, with all its complexity and diversity.

A key strength of the program is its ability to provide individualized programs of study for scholars with a wide variety of interests who seek to serve as leaders in various facets of mathematics education. The program participants conduct research in curriculum, instruction, learning, assessment, professional development, teacher beliefs, and student attitudes. Students in the PhD program not only learn how to conduct such research but also serve in apprenticeship roles in teacher preparation and professional development to prepare them for university faculty positions and other leadership roles in mathematics education.

The PhD program in Mathematics Education is built on a common foundation of learning theory, curriculum and instruction theory, social and cultural contexts of education, ethics, and quantitative and qualitative research methods, which is then extended to a profound understanding in mathematics and mathematics education. For each individual scholar, this foundation plus specialization serves as the basis for investigating a significant educational issue that will advance the field of mathematics education and prepare the scholar for future research. A typical program consists of the following components:

Foundation

Teacher Education Core (18 semester-hour minimum)

EDTE 7150. Theories of Curriculum Change
EDTE 7160. Theories of Instructional Design and Evaluation
EDTE 7920. Curriculum and Instruction Practicum
EDTE 8000. Advanced Dynamics of Human Learning
EDTE 8040. Writing for Professional Publication in Education

Students are encouraged to take additional courses in teacher education, instructional technology, cultural studies, ethics, or other areas of professional education to broaden their foundation.

Quantitative and Qualitative Research Methods (18 semester-hour minimum)

EDRE 7200.[1] Educational Statistics
EDRE 7500.[1] Introduction to Qualitative Methods in Education
EDRE 7210. Regression Analysis in Education
EDRE 7330.[2] Research Design in Education

Most students take additional course work in EDRE or work in *research tools* in preparation for their dissertation. Examples of research tools are computer languages and applications, historiography, philosophy, foreign language, and additional specific qualitative or quantitative research methods. Students may find some research courses in departments outside of Education.

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[1] Required, to be taken early in the program

[2] Highly recommended, to be taken near the end of the coursework phase of the program

Specialization (24 semester-hour minimum)

Mathematics (9 semester-hour minimum)

Students entering the program are expected to have a level of mathematics preparation equivalent to a master's degree in mathematics education. Those with less preparation will be expected to reach this level early in the program. In any case, graduate level mathematics courses are selected to extend the depth and breadth of prior mathematical proficiency. Topics could include algebra, analysis, geometry, topology, number theory, modeling, statistics, probability, combinatorics, history of mathematics, or other areas of the mathematical sciences.

Mathematics Education (12 semester-hour minimum)

EDTE 8900. Assessment in Educational Contexts: Theory, Research, Policy, and Classroom Practice
EDTE 8940. Mathematics Education through the Lens of Curriculum
EDTE 8940. Mathematics Education through the Lens of Technology

In addition to these three core courses, students take additional courses, such as the following:

EDTE 8310. Practicum in Mathematics Education
EDTE 8900. Research in Education: Readings in Mathematics Education
EDTE 8900. Research in Education: Research in Mathematics Education

Comprehensive Examination

Written and Oral Components

Once the student virtually has completed an approved program of course work as described above, a committee of professors examines the students in areas of (a) teacher education, (b) research methods, (c) mathematics, and (d) mathematics education. The student prepares written responses to comprehensive exam questions in these four areas and then meets with the committee for the follow-up oral component of the exam.

Culminating Investigation and Associated Product

Dissertation (10 semester-hour minimum)

The student proposes, conducts, and prepares a comprehensive written report of an individually designed research study addressing a significant educational issue that will advance the field of mathematics education and will prepare the scholar for future research.