

Overview of Master of Arts in Mathematics Education Program Change

The Department of Mathematics and Computer Science has enacted changes in the M.A. in Math Ed. as part of the revisioning process to the standards revised by NCDPI as follows:

1. The prefix of our pedagogy courses have changed from MAT to MATE.
2. The prefix of our content courses have changed from MAT to MATH.
3. Some of the numbers of courses have changed to conform to new descriptions.
4. Several existing courses have been modified to match the revisions (see pages 3 & 4).
5. Two new pedagogy courses have been added to the required courses (see page 3).
6. Two new content courses have combined content from existing courses (see page 4).
7. There are no longer options offered within each content area (see page 2).
8. The new program timeline cycles on a two-year replication of courses (see page 5).

Rationale for changes:

The Department of Mathematics and Computer Science has proposed these changes in response to the revisions made by the North Carolina Department of Public Instruction. Each graduate program was to revise the program to ensure current standards were met. The prefix change was made to clearly identify which courses were pedagogy courses and which were content courses. A capstone course, MATE 5990, was added to ensure that candidates integrated the work done in various courses into a comprehensive research based project. Since enrollment is key to any program, optional choices had to be removed to ensure maximum enrollment when courses were offered. In addition, the program was developed with a two-year timeline to ensure maximum enrollment as well. The two-year cycle allows candidates (if they so desire) to complete the program in as little as two years without causing scheduling conflicts. The following pages illustrate the new program requirements, a brief description of course modifications or additions, and the timeline.

MASTER OF ARTS IN MATHEMATICS EDUCATION (M.A.)

Requirements for a Master of Arts in Mathematics Education Sem. Hrs.

Pedagogical Requirements **15**
Mathematics Education

MATE 5500 Curriculum Development and Evaluation in Mathematics Education
MATE 5530 Teaching Critical Thinking and Problem Solving Techniques
MATE 5600 Advanced Classroom Instruction in Mathematics Education
MATE 5660 Advanced Educational Research in Mathematics Education
MATE 5990 Professional Development and Leadership Seminar

Academic Specialization **21**
Mathematics Content

1. Analysis
 - MATH 5210 Analysis I for Math Teachers
 - MATH 5220 Analysis II for Math Teachers
2. Algebra and Discrete Mathematics
 - MATH 5410 Advanced Topics in Abstract Algebra
 - MATH 5420 Special Topics in Discrete Mathematics
3. Geometry
 - MATH 5110 Advanced Topics in Geometry
4. Statistics
 - MATH 5060 Statistics and Probability for Math Teachers
5. Technology in Education
 - MATH 5080 Technology in Mathematics Education

Total : 36

New or modified course descriptions:

Mathematics Education Courses

MATE 5500 Curriculum Development and Evaluation in Mathematics Education
This is basically MAT 5000 with a few modifications to fit what DPI wants.

MATE 5530 Teaching Critical Thinking and Problem Solving Techniques
This is MAT 5030, changed to a pedagogy course since it teaches HOW instead of content, a few additional topics will be added, like motivation and alternative teaching methods.

MATE 5600 Advanced Classroom Instruction in Mathematics Education
This course covers topics from MAT 5010 based on philosophical and psychological concerns involving such things as: diversity, classroom environment, classroom management, plagiarism, classroom behavior, etc.

MATE 5660 Advanced Educational Research in Mathematics Education (new course)
Students will learn how to carry out research methods pertaining to math and education. Students will lay the ground work for the capstone course here by determining what area(s) they may want to research.

MATE 5990 Professional Development and Leadership Seminar (new course)
A capstone experience for mathematics teachers. Candidates will successfully complete a comprehensive research based project in mathematics education by integrating knowledge gained throughout the program into a final conceptual framework. The project may take the form of a thesis or a comprehensive portfolio, and will incorporate educational research. This project will include the candidate's plans for future professional development. Each candidate will give an oral presentation of their completed comprehensive project for review by the graduate faculty in the mathematics department.

Mathematics Core

MATH 5060 Statistics and Probability for Math Teachers

Many (most) institutions require a course like this, and DPI wants teachers to be knowledgeable in both statistics and probability. This is the same course that had previously been offered.

MATH 5080 Technology in Mathematics Education

This takes the place of CSC 5050. It will emphasize using technology in teaching math and involve mathematics...CSC 5050 did not.

MATH 5110 Advanced Topics in Geometry for Math Teachers

Same course, I just added that it was for teachers to the title.

MATH 5210 Analysis I for Math Teachers

Review of important concepts in Calculus that most teachers missed as undergraduates. This course already existed, however, some changes have been made in order to integrate some of the introductory topics from MAT 5230 and 5440 into this course as well.

MATH 5220 Analysis II for Math Teachers

Here we can add in additional materials from MAT 5230 and 5440 in addition to advanced content like topology, etc. that is relevant to the needs of teachers.

MATH 5410 Advanced Topics in Abstract Algebra (new course)

We can start here with a review of basic but important areas of linear and modern Algebra, and incorporate some of the topics from MAT 5120 and 5260.

MATH 5420 Special Topics in Discrete Mathematics (new course)

This course will incorporate many of the important topics from MAT 5070 and 5150 to ensure a completed knowledge to round out content not covered in other advanced courses.

***New timeline for two-year turn around in Master of Arts in Mathematics Education (MA)
When approved, the schedule would follow the following sequence (starting 2011)**

Summer (odd years)	MATE 5500 Curriculum Development and Evaluation in Math Education
Fall (odd years)	MATH 5210 Analysis I for Math Teachers MATH 5060 Statistics and Probability for Math Teachers
Spring (even years)	MATH 5220 Analysis II for Math Teachers MATE 5660 Advanced Educational Research in Mathematics Education
Summer (even years)	MATE 5530 Teaching Critical Thinking and Problem Solving Techniques MATE 5600 Advanced Classroom Instruction in Mathematics Education
Fall (even years)	MATH 5110 Advanced Topics in Geometry for Math Teachers MATH 5410 Advanced Topics in Algebra
Spring (odd years)	MATH 5080 Technology in Mathematics Education MATH 5420 Special Topics in Discrete Mathematics

The order of courses was developed so a candidate entering the program would not enter in the middle of the program. The courses (and thus the topics) covered each year are independent of the following year, so it would not matter what year a candidate enters the program. The pedagogy courses would be taught during the summer, except for the research course which follows the statistics course so they can use the knowledge gained from that course in their research.

Note: MATE 5990 would always be available, depending on when the student is ready to take it. Students work with an advisor... not a scheduled course. Student would register for this course during their last year or semester based on advice from their advisor and/or the program Director.