MATHEMATICS EDUCATION (MTED)

MTED 290. EARLY MATH PRACTICUM. 3 Credits.
Pre-requisites: MATH 208 or MATH 141 or placement into ≥ MATH 161.
This course is primarily an early field experience for students majoring in mathematics education. Students are in a classroom, co-plan and co-teach lessons, tutor students and participate in seminar.

MTED 299. DIRECTED STUDY. 1-5 Credits.
Independent/Directed Study.

MTED 300. MATHEMATICS FIELD EXPERIENCE. 2-5 Credits.
Notes: may be repeated for credit.
Pre-requisites: junior standing.
Provides extra support and practice for teacher candidates preparing to teach mathematics. Students will plan and teach mathematics lessons, discussing the lessons with the instructor before and after teaching. Course instructor will observe at least one lesson, and videotapes of other lessons.

MTED 396. EXPERIMENTAL. 1-5 Credits.
Experimental.

MTED 399. DIRECTED STUDY. 1-6 Credits.
Independent and directed study.

MTED 425. ASSESSMENT IN THE MATHEMATICS CLASSROOM. 3 Credits.
Notes: may be repeated for credit.
Pre-requisites: junior standing.
Focuses on the relationship between classroom assessment and mathematics learning through readings, discussion, and practice-based methods. Addresses the forms and purposes of assessment in the mathematics classroom including the alignment of assessment to mathematics instruction, use of multiple sources of assessment information as evidence of learning, students' roles in assessment, and reflecting on effective methods. Students will use assessment to evaluate the effectiveness of lessons.

MTED 429. TOPICS IN MATHEMATICS EDUCATION. 1-3 Credits.
Notes: May be repeated for credit with different topics (specified in the section title). May be stacked with MTED 529.
Pre-requisites: junior standing.
This course includes topics regarding the teaching and learning of mathematics selected depending on the interest of the class and instructor. Possible topics may include (but are not limited to): history and culture of mathematics, history of mathematics education, systems theory and learning, and equity.

MTED 476. MATHEMATICAL PROGRESSIONS. 3 Credits.
Notes: may be repeated for credit.
Pre-requisites: junior standing.
Focuses on the practical development of conceptually connected lesson sequences. Students plan a sequence of lessons that meet state standards and is mathematically coherent. This plan addresses the conceptual development of the topics. Throughout, students explore the mathematical derivation of this and related topics, anticipate students' future development and history with the topic, adapt their lesson plans to be suitable for the students in their classroom, and assess its effectiveness.

MTED 478. MATHEMATICAL MODELING IN SCHOOLS. 3 Credits.
Notes: may be repeated for credit.
Pre-requisites: junior standing.
Focuses on the development of project-based instruction in mathematical modeling that bridges the gaps between mathematics, science, and computer science instruction. Students will examine different methodologies of mathematical modeling instruction, contrasting different types and purposes of mathematical models and simulations. Students will develop their own modeling project for use in classrooms, sharing projects to create a library of projects that they can carry with them post-graduation.

MTED 490A. SENIOR CAPSTONE: ELEMENTARY PRACTICUM. 5 Credits.
Notes: MTED 490A fulfills the Capstone requirement for the BAE Math/Elementary majors, and MTED 490B fulfill the Capstone requirement for the BAE Math/Secondary majors.
Pre-requisites: senior standing.
Satisfies: a university graduation requirement–senior capstone.
This course is a practicum for Mathematics Education majors. The students will do a pre-student teaching classroom experience in a K–12 mathematics classroom (3 credits) and participate in a a seminar (2 credits). Lessons will be planned and taught. Emphasis will be on putting educational theory into practice and reflecting on the process, particularly in the areas of problem solving, the NCTM Standards, use of manipulative materials and assessment.

MTED 490B. SENIOR CAPSTONE: SECONDARY PRACTICUM. 5 Credits.
Notes: MTED 490A fulfills the Capstone requirement for the BAE Math/Elementary majors, and MTED 490B fulfills the Capstone requirement for the BAE Math/Secondary majors.
Pre-requisites: senior standing; MTED 425, MTED 476, or MTED 478.
Satisfies: a university graduation requirement–senior capstone.
This course is a practicum for students majoring in Mathematics Education. The students will do a pre-student teaching classroom experience in a K–12 mathematics classroom (3 credits) and participate in a a seminar (2 credits). Lessons will be planned and taught. Emphasis will be on putting educational theory into practice and reflecting on the process, particularly in the areas of problem solving, the NCTM Standards, use of manipulative materials and assessment.

MTED 492. UNDERGRADUATE RESEARCH IN MATHEMATICS EDUCATION. 1-4 Credits.
Notes: may be repeated for credit.
Pre-requisites: junior standing; at least one prior MTED course is highly recommended.
Students will read current research in mathematics education, write research questions, design a research project, carry out the project and present their results to an audience either as a presentation or as a written report submitted to a journal.

MTED 496. EXPERIMENTAL COURSE. 1-5 Credits.
Experimental.

MTED 499. DIRECTED STUDY. 1-5 Credits.
Directed Study.

MTED 525. ASSESSMENT AND MATHEMATICS LEARNING. 3 Credits.
Pre-requisites: graduate standing.
This course explores the relationship between assessment and mathematics learning. In particular, we will focus on the forms and purposes of assessment in the mathematics classroom, including the alignment of assessment to instruction, use of multiple sources of assessment information as evidence of learning and appropriate methods. Through readings, discussion and a hands-on problem-centered approach, students will extend their understanding of the research on assessment and the roles of assessment in K–9 mathematics classrooms.

MTED 527. TECHNOLOGY IN MATH TEACHING. 3 Credits.
Pre-requisites: graduate standing.
This course will explore the appropriate use of technology in mathematics education from philosophical, social, theoretical and pedagogical perspectives. It will provide perspectives on current and future trends and issues regarding the use of technology in mathematics teaching and learning. Students will use technology to solve mathematical problems, create mathematical demonstrations and construct new ideas of mathematics. Special attention is devoted to developing a deep understanding of the appropriate use of technology to explore and learn mathematics.

MTED 529. TOPICS IN MATH EDUCATION. 3 Credits.
Notes: may be repeated for credit with different topics.
Pre-requisites: graduate standing.
This course includes topics regarding the teaching and learning of mathematics selected depending on the interest of the class and instructor. Possible topics may include (but are not limited to): history and culture of mathematics, history of mathematics education, systems theory and learning and equity. Topics will be specified in the section subtitle.

MTED 590. MATH METHODS FOR ELEMENTARY TEACHERS. 5 Credits.
Pre-requisites: bachelor's degree or permission of instructor.
Designed to expose participants to a variety of instructional techniques for teaching mathematics concepts and skills at the K–8 level. Strengths and weaknesses of different techniques, such as lecture demonstration, small-group activities and problem solving are modeled and discussed.

MTED 592. THEORY AND RESEARCH IN MATHEMATICS EDUCATION. 3 Credits.
Pre-requisites: graduate standing.
This course is designed for graduate students in mathematics education who intend to pursue or further teaching careers. This course will explore the history of research in mathematics education; discuss various theories of mathematics learning; evaluate, synthesize and critique mathematics education research; and become acquainted with a diverse sample of quantitative and qualitative studies in mathematics education, as well as, with issue of current interest within the community. The course will be focused on issues that mathematics teachers should understand and investigate; including both content and research methods. In addition, students will be expected to select a mathematics content and/or pedagogical topic for particular emphasis in the course and conduct a research review. Students will leave the course with an understanding of the history of mathematics education research and of the use of research to inform teaching practice.

MTED 599. INDEPENDENT STUDY. 1-6 Credits.

MTED 694. MATHEMATICS MIDDLE LEVEL TEACHING INTERNSHIP. 4 Credits.
Pre-requisites: four courses from the MATH 510 to MATH 516 series and MTED 525 or MATH 528.
This course is a field experience in a middle level mathematics classroom. Candidates will demonstrate competency at designing and implementing mathematics instruction, guided by continuous formative assessment, that enables a broad diversity of learners to construct meaning, create and defend conjectures, solve problems, utilize procedures and notation, and monitor their learning.

MTED 695. MATHEMATICS EDUCATION INTERNSHIP. 6 Credits.
Pre-requisites: graduate standing; permission of the instructor, department chair and college dean.
The theories of teaching and learning mathematics explored in MATH 592 Theory and Research in Mathematics Education are made practically relevant in this course, as student teach classes such as MATH 211 or MATH 212 while being mentored by faculty having experience with those classes. One-hour weekly seminars complement the in-class teaching assignment.