MATHEMATICS FOR TEACHERS (MTCH)

**MTCH 8010  STATISTICAL RESEARCH FOR MATHEMATICS TEACHERS**  
(3 credits)  
This course is designed for graduate students in the MAT program who select the statistics option to complete their degree. The student will do a literature review, design a study involving mathematics education, gather and analyze the data, and prepare a manuscript for submission to a refereed journal. (The course will not count toward a major in the MA or MS program.) To prepare for the course, interested students should contact the instructor of the course several months before (8 is the norm) to have time to do the groundwork for the study.  
**Prerequisite(s)/Corequisite(s):** STAT 8015 and TED 8010.

**MTCH 8020  TOPICS IN GEOMETRY AND TOPOLOGY**  
(3 credits)  
Symmetry, Platonic solids, Symmetry groups including finite Dihedral groups the Euclidean group and lattice point groups, graph theory, topology of the plane, Euler Characteristic and classification of closed surfaces. Connections to the high school classroom will be explored.  
**Prerequisite(s)/Corequisite(s):** Secondary teacher certification or working toward it, or permission of instructor.

**MTCH 8030  PROBLEM SOLVING WITH NUMBER SENSE & GEOMETRY FOR TEACHERS**  
(3 credits)  
Rigorous mathematical thought in games and puzzles, advanced number sense, the notion of infinity, and novel interpretations and geometric properties  
**Prerequisite(s)/Corequisite(s):** Admission to the Graduate Program

**MTCH 8040  TOPICS IN MATHEMATICAL COMPUTING**  
(3 credits)  
This course focuses on the current state-of-the-art technology that is either designed for or is uniquely suitable for teaching mathematics. (Cross-listed with STEM 8040)  
**Prerequisite(s)/Corequisite(s):** MATH 2200 or equivalent or approval of instructor.

**MTCH 8100  NUMBERS AND OPERATIONS I**  
(3 credits)  
This course is designed to give elementary teachers a fundamental and conceptual understanding of numbers and operations used in the elementary mathematics curriculum. The course also offers a foundation for developing “habits of mind of a mathematical thinker” as they are related to reasoning, writing mathematical ideas, and problem solving.  
**Prerequisite(s)/Corequisite(s):** Be a current or former elementary teacher or have a state certification to teach elementary.

**MTCH 8120  GEOMETRY AND ALGEBRA FOR ELEMENTARY TEACHERS**  
(3 credits)  
This course is designed to give elementary teachers a fundamental and conceptual understanding of geometry and algebra used in the elementary mathematics curriculum. The course also offers a foundation for developing “habits of mind of a mathematical thinker” as they are related to reasoning, writing mathematical ideas, and problem solving.  
**Prerequisite(s)/Corequisite(s):** B- or higher in MTCH 8100

**MTCH 8806  MATHEMATICS EDUCATION CAPSTONE**  
(3 credits)  
This capstone course for preservice and inservice teachers is intended to help connect the undergraduate mathematics curriculum to the secondary mathematics curriculum. Course topics include functions, equations, algebraic structures, congruence, trigonometry, and calculus. Topics are explored via strategies useful for studying mathematics called concept analysis and problem analysis. (Cross-listed with MTCH 4800).  
**Prerequisite(s)/Corequisite(s):** MATH 4030 with a C or better or MATH 3640 with a C or better.