### MAE - MATHEMATICS EDUCATION

**MAE 5100 Geometry for Middle School Teachers Cr. 3**
Development of Euclidean geometry as a mathematical system; related historical topics; introduction to other geometries; selected topics such as transformations and tessellations. No credit toward a major or minor for secondary mathematics teaching. Offered Yearly.

**Prerequisites:** MAT 1110 and MAT 1120  
**Equivalent:** MAT 5180

**MAE 5110 Number Theory for Middle School Teachers Cr. 3**
Topics from elementary theory of numbers which underlie middle school mathematics; historical connections; role of abstraction and proof in mathematics. No credit toward a major or minor for secondary mathematics teaching. Offered Yearly.

**Prerequisites:** (MAT 1800) OR (MAE 5060) OR (MAT 1120)  
**Equivalent:** MAT 5190

**MAE 5120 Abstract Algebra for Middle School Teachers Cr. 3**
Topics from elementary abstract algebra underpinning middle school mathematics curriculum; historical connections; role of abstraction and proof in mathematics. No credit towards major in mathematics or secondary mathematics. Offered Yearly.

**Prerequisites:** (MAT 1120 and MAT 1800) OR (MAE 5060)  
**Equivalent:** MAT 5120

**MAE 5130 Problem Solving for Middle School Teachers Cr. 3**
Development of mathematical problem solving in middle grades mathematics education; study of non-routine problems; problem solving strategies; historical connections; connections to selected mathematics content and to topics in other disciplines. No credit toward a mathematics major or secondary mathematics education major. Offered Yearly.

**Prerequisites:** (MAT 1120 and MAT 1800) OR (MAE 5060)  
**Equivalent:** MAT 5130

**MAE 5150 Methods and Materials of Instruction: Secondary School Mathematics Cr. 3**
Mathematics in secondary school; major concepts of secondary school mathematics; methods and instructional materials; classroom administration; modern trends. Offered Yearly.

**Restriction(s):** Students with a class of Freshman or Sophomore may not enroll, student with a major of Education General, No Major, Level 1 - Elementary Education, Level 1 - Kinesiology, PB Pre Teaching Cert, Level 1 - Secondary Education or Level 1 - Special Education may not enroll, enrollment limited to students in the College of Education.

**MAE 6050 Teaching Mathematics in the Middle Grades Cr. 3**
Creative use of resources and materials for improving the mathematics competencies of middle school and junior high school students; organizing the mathematics classroom for effective instruction; promising trends; related research. Offered Yearly.

**Restriction(s):** Students with a class of Freshman or Sophomore may not enroll, student with a major of Education General, No Major, Level 1 - Elementary Education, Level 1 - Kinesiology, PB Pre Teaching Cert, Level 1 - Secondary Education or Level 1 - Special Education may not enroll, enrollment limited to students in the College of Education.

**MAE 6150 Special Topics Cr. 1-6**
Current issues and trends; areas of neglected content; curriculum proposals; related research. Topics to be announced in Schedule of Classes. Offered Irregularly.  
**Repeatable for 12 Credits**

**MAE 6200 Teaching Arithmetic, Algebra and Functions from an Advanced Perspective Cr. 3**
Students gain profound understanding of K-12 mathematics. Concepts underlying topics and procedures; their connections to higher mathematics. Teaching with Simplify; application of mathematical understanding to teaching practices. Offered Yearly.

**Prerequisites:** (MAT 5120) OR (MAT 6170) OR (MAT 6180)  
**Equivalent:** MAT 6200

**MAE 6210 Teaching Geometry, Probability and Statistics, and Discrete Mathematics from an Advanced Perspective Cr. 3**
Historical perspectives, common conceptions and misconceptions, applications, technology, and mathematical connections relative to teaching geometry (including trigonometry), probability and statistics, and discrete mathematics in secondary school. Offered Yearly.  
**Equivalent:** MAT 6210

**MAE 6400 Elementary School: Mathematics Curriculum and Assessment Cr. 3**
Developing competence in school mathematics programs: objectives, procedures, materials, organizational patterns, evaluation. Offered Every Term.

**MAE 6450 Integrating Literacy & Mathematics: Elementary School Cr. 3**
Offered Spring/Summer.

**MAE 7150 Advanced Studies in Teaching Discrete Mathematics Cr. 3**
Nature of discrete mathematics and its applications, incorporating discrete topics in school mathematics. Offered Biannually.

**MAE 7200 Advanced Studies in Teaching Statistics and Probability Cr. 3**
Techniques for teaching statistics and probability in grades K-12; promising materials and activities; research on the learning and teaching of statistics and probability; related resources; review of basic concepts. Offered Biannually.

**MAE 7250 Advanced Studies in Teaching Algebra Cr. 3**
Fundamental concepts of algebra for a modern secondary school mathematics program; current trends and experimental programs; related research; methods and materials of instruction. Offered Biannually.

**MAE 7300 Advanced Studies in Teaching Geometry Cr. 3**
Role of geometry and trigonometry in secondary school mathematics; selection of major concepts; development of postulational thinking; teaching procedures emphasizing modes of thinking in mathematics; modern trends. Offered Biannually.

**MAE 7400 Seminar in Mathematics Education Cr. 3**
Recent research in mathematics education; implications for learning and teaching, K-12. Topics to be announced in Schedule of Classes. Offered Yearly.

**Repeatable for 9 Credits**

**MAE 8400 Technology in Mathematics Learning and Teaching Cr. 3**
Recent research on the use of technology in mathematics education; implications for learning and teaching mathematics, K-12. Offered Biannually.

**MAE 8550 Theoretical Perspectives on Learning Mathematics Cr. 3**
Survey of various perspectives on the learning and teaching of mathematics; underlying psychological bases; implications for teaching. Offered Biannually.