MAE - MATHEMATICS EDUCATION

MAE 1000 Detroit by the Numbers Cr. 3
Satisfies General Education Requirement: Quantitative Experience Comp
Designed for students to experience mathematics as doable, meaningful, and relevant to their lives. Students will study the city of Detroit by analyzing data and reasoning through quantitative tools presented by local agencies, such as health, environment, education, arts, and sports. Offered Every Term.

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 Every Other Year.
Prerequisites: MAT 1110 with a minimum grade of C- and MAT 1120 with a minimum grade of C-
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 Every Other Year.
Prerequisites: MAT 1800 with a minimum grade of C- or MAT 1120 with a minimum grade of C-
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 Every Other Year.
Prerequisites: MAT 1120 with a minimum grade of C- and MAT 1800 with a minimum grade of C-
Equivalent: MAT 5120

MAE 5130 Problem Solving for Middle School Teachers (5-9) 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. Offered Every Other Year.

MAE 5140 Proportional and Algebraic Reasoning for Middle Grades Teachers (5-9) Cr. 3
Proportional reasoning involves thinking about relationships and making comparisons of quantities or values. This course explores those relationships and the ability to think about and compare multiplicative relationships between quantities through the lens of algebraic and proportional reasoning. Offered Every Other Year.

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.
Corequisite: MAE 5155
Restriction(s): Enrollment limited to students in the College of Education.

MAE 5155 Secondary Mathematics Clinical (7-12) Cr. 2
This course offers school-based mathematics clinical experience in the 7-12 grade band for pre-service teachers. Experience includes relevant classroom observations; data collection on student learning, instruction, assessment; lesson plan implementation; and collaboration with clinical instructors and mentor educators. Offered Yearly.
Corequisite: MAE 5150

MAE 6050 Teaching Mathematics Methods 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.
Corequisite: MAE 6055
Restriction(s): Enrollment limited to students in the College of Education.

MAE 6055 Teaching Mathematics in the Middle Grades Clinical (5-9) Cr. 2
This course offers school-based mathematics clinical experience in the 5-9 grade band for pre-service teachers. Experience includes relevant classroom observations; data collection on student learning, instruction, assessment; lesson plan implementation; and collaboration with clinical instructors and mentor educators. Offered Yearly.
Corequisite: MAE 6050

MAE 6075 Historical and Social Contexts of Teaching Mathematics (5-12) Cr. 3
This course examines current and historical mathematical educational practices that contribute inequitable access and opportunity and ethical and equitable practices in the mathematics classrooms. Offered Yearly.

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 Intermittently.
Repeatable for 12 Credits

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 Winter.
Equivalent: MAT 6210

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 Every Other Year.
Restriction(s): Enrollment is limited to Graduate level students.

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 Every Other Year.
Restriction(s): Enrollment is limited to Graduate level students.

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 Every Other Year.
Restriction(s): Enrollment is limited to Graduate level students.