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 Yearly.
Prerequisites: MAT 1110 with a minimum grade of C- and MAT 1120 with a minimum grade of C-
Equivalent: MAT 5100

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 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 Yearly.
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 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 towards a mathematics major or secondary mathematics education major. Offered Yearly.
Prerequisites: MAT 1120 with a minimum grade of C- and MAT 1800 with a minimum grade of C-
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): Enrollment limited to students in the College of Education.

MAE 6050 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 Every Other Year.
Restriction(s): Enrollment is limited to Graduate level students.
Repeatable for 9 Credits

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 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 Literature and Mathematics in the Elementary School Cr. 3
Examining the potential of literature for exploration of various mathematical concepts and relationships. 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 Every Other Year.
Restriction(s): Enrollment is limited to Graduate level students.

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.

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.
Restriction(s): Enrollment is limited to Graduate level students.
Repeatable for 9 Credits

MAE 7410 Field Experience in Mathematics Education Cr. 3
Enrollment is limited to students in the College of Education.

MAE 7415 Research in Mathematics Education Cr. 3
Recent research in mathematics education; implications for learning and teaching, K-12. Offered Every Other Year.
Restriction(s): Enrollment is limited to Graduate level students.
Repeatable for 9 Credits

MAE 7450 Graduate Seminar in Mathematics Education Cr. 3
Recent research in mathematics education; implications for learning and teaching, K-12. Offered Every Other Year.
Restriction(s): Enrollment is limited to Graduate level students.
Repeatable for 9 Credits

MAE 7610 Mathematics Education Specialist Preparation Cr. 3
Developing competence in school mathematics programs: objectives, procedures, materials, organizational patterns, evaluation. Offered Every Term.

MAE 7620 Advanced Studies in Teaching Calculus and Advanced Placement Mathematics Cr. 3
Techniques for teaching calculus and advanced placement mathematics, incorporating advanced topics in school mathematics. Offered Every Other Year.
Restriction(s): Enrollment is limited to Graduate level students.

MAE 7700 Professional Development 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.
Restriction(s): Enrollment is limited to Graduate level students.
Repeatable for 9 Credits

MAE 7750 Advanced Topics in Mathematics Education Cr. 3
Recent research in mathematics education; implications for learning and teaching, K-12. Offered Every Other Year.
Restriction(s): Enrollment is limited to Graduate level students.
Repeatable for 9 Credits

MAE 7800 Seminar in Mathematics Education Research Cr. 3
Recent research in mathematics education; implications for learning and teaching, K-12. Offered Every Other Year.
Restriction(s): Enrollment is limited to Graduate level students.
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MAE 8400 Elementary School: Mathematics Curriculum and Assessment Cr. 3
Developing competence in school mathematics programs: objectives, procedures, materials, organizational patterns, evaluation. Offered Every Term.

MAE 8450 Integrating Literature and Mathematics in the Elementary School Cr. 3
Examining the potential of literature for exploration of various mathematical concepts and relationships. Offered Spring/Summer.

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Nature of discrete mathematics and its applications, incorporating discrete topics in school mathematics. Offered Every Other Year.
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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.
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Recent research in mathematics education; implications for learning and teaching, K-12. Offered Every Other Year.
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MAE 8450 Integrating Literature and Mathematics in the Elementary School Cr. 3
Examining the potential of literature for exploration of various mathematical concepts and relationships. Offered Spring/Summer.
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 Every Other Year.
Restriction(s): Enrollment is limited to Graduate level students.