Mathematics for Teachers Courses

[E = Elementary, M = Middle School, S = Secondary]

Math 130 Mathematics for Teachers: Number Systems (3) **E, M**
Prerequisites: High school algebra and geometry.
Description: Designed for elementary school teachers. A constructive development of the real number system beginning with the system of whole numbers; concepts from elementary number theory; applications of quantitative systems to problems in discrete mathematics.

Math 140 Mathematics for Teachers: Elementary Geometry (3) **E, M**
Prerequisites: High school algebra and geometry.
Description: Designed for elementary school teachers. A development from informal geometric concepts to elements of the Euclidean deductive system; groups of congruence transformations, similarity transformations and symmetries; coordinate systems and vectors.

Math 214 Mathematics for Teachers: Algebra (3) **E, M**
Prerequisites: Math 110, Math 130, and one of Math 140 or Math 224
Description: Designed for middle school mathematics teachers. Algebraic reasoning, patterns and inductive reasoning, arithmetic and algebra of integers, algebraic systems, algebraic modeling in geometry, axiomatic mathematics.

Math 224 Mathematics for Teachers: Geometry (3) **M**
Prerequisites: Math 110 and Math 130; Math 140 is recommended
Description: Designed for middle school mathematics teachers to connect middle school and college mathematics. Geometric reasoning, Euclidean geometry, congruence, area and volume, similarity, rigid motions and symmetry, vectors and transformations, some other geometries.

Stat 234 Mathematics for Teachers: Probability and Statistics (3) **E, M**
Prerequisites: Four units of high school mathematics, or one of Math 130, Math 140, or Math 244.
Description: Designed for elementary-and middle-school mathematics teachers. Foundational knowledge of probability and statistics, elements of statistics, organizing, displaying and describing data, probability distributions, correlation, regression, prediction, estimation.

Math 244 Mathematics for Teachers: Calculus (3) **E, M**
Prerequisites: Four units of high school mathematics including Trig., or Math 120, or Math 110 & Math 125.
Description: Designed for elementary-and middle-school mathematics teachers. Elementary calculus, beginning with sequences and series, proceeding to functions, limits, continuity, differentiation and integration. Focus on concepts and applications with a discovery and inquiry approach.

Math 204 Mathematics for Teachers: Mathematical Immersion (3) **E, M, S**
Prerequisites: Math 120, 130, 140, or any mathematics course numbered 200 or above.
Description: Adaptable for elementary-, middle-, or secondary-school mathematics teachers. Intensive problem solving experience. Develop confidence and enthusiasm about recognizing mathematics reasoning in oneself and in students. Combat mathematics anxiety and myths. Encourage flexibility in the mathematical knowledge of teacher candidates.

Prerequisite Courses indicated, but not described above:

Math 110	College Algebra	Math 125	Trigonometry
Math 120	Precalculus		

Math 414/5514 Mathematics for Secondary Teachers: Algebra & Analysis (3) **S**
Prerequisites: Math 220, Math 301 and one of Math 300 or Math 402 or Math 410, or equivalent training.
Description: Designed for secondary-school teachers. Examine high school mathematics from a higher point of view. **Real and complex numbers, functions, algebraic structures of equations, integers and polynomials, number system structures**; analyses of alternate approaches, extensions, and applications of mathematical ideas, discussion of historical contexts and connections between ideas that may have been studied separately in different courses, relationships of ideas studied in secondary-school to those students may encounter in later study. When taken for graduate credit as Math 5514, an extra project is required.

Math 424/5524 Mathematics for Secondary Teachers: Geometry (3) **S**
Prerequisites: Math 220, Math 301, and one of Math 300 or Math 402 or Math 410, or equivalent training.
Description: Designed for secondary-school teachers. Examine high school mathematics from a higher point of view. **Congruence, distance and similarity, trigonometry, area and volume, axiomatics and Euclidean geometry**; analyses of alternate approaches, extensions, and applications of mathematical ideas, discussion of historical contexts and connections between ideas that may have been studied separately in different courses, relationships of ideas studied in secondary-school to those students may encounter in later study.
When taken for graduate credit as Math 5524, an extra project is required.

Prerequisite Courses indicated, but not described above:

Math 220	Calculus II	Math 402	Advanced Analysis I
Math 300	Linear Algebra I	Math 410	Modern Algebra
Math 301	On Solid Ground: Sets & Proof		

Current Pattern of Offerings **(Subject to Change)**

Fall	Spring	Summer
130a	130a	130
130b	130b	
140a	140a	
140b	140b	
	204	
	214	
224		
	234	
244		
		414/5514
424/5524		

- For more **About Our Courses**, see: http://cas.umkc.edu/math/MathCourses.htm .
- For our **Current (and Upcoming) Semester Schedules** of course offerings, with days and times, see: http://cas.umkc.edu/math/MathCurrentSchedule.htm
- **Mathematics for Teachers Coordinator:**
  Dr. Richard Delaware delawarer@umkc.edu (816) 235-2850
  UMKC Department of Mathematics & Statistics http://cas.umkc.edu/math/MathTeachers.htm
  See our new **Professional Development** page: http://cas.umkc.edu/math/MathTeacherProfDev.htm

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