

Course Outline for MATH 3482, Mathematics for Elementary Teaching II

MATH 3482 Mathematics for Elementary Teaching II (4 units)

Prerequisite: MATH 3481 with a grade of C- or better.

Introduction to number theory including prime numbers, composite numbers, and divisibility. The relationship between ratios, rates, and proportions. Problem solving using proportional reasoning. Algebraic reasoning related to patterns and to linear, quadratic, and exponential functions. 4 lectures.

Course Learning Objectives	
1	Explain properties of prime numbers, composite numbers, greatest common divisors, and least common multiples as well as solve problems related to these concepts.
2	Justify the divisibility tests for 2, 3, 4, 5, 6, 8, 9 and 10.
3	Describe the connections between ratios, rates, proportions, percents, proportional reasoning and slope.
4	Solve and pose problems about algebraic patterns and general functions.
5	Solve and pose problems about linear functions and systems of equations.
6	Solve and pose problems about quadratic functions.
7	Solve and pose problems about exponential functions.

Expanded Course Content

Textbooks, materials, and/or other resources
Beckmann, S. Mathematics for Elementary and Middle School Teachers with Activities. 6th Edition, Pearson.

Week	Readings	Topics of Discussion
1	Section 7.1	Multiplicative relationships between quantities, defining ratio and problem solving in both contexts.
2	Sections 7.2, 7.3	Solving proportion problems using multiple strategies, including multiplication/division, unit rate and ratio tables.

Week	Readings	Topics of Discussion
3	Sections 7.2, 7.3	Solving proportion problems using multiple strategies, including multiplication/division, unit rate and ratio tables.
4	Sections 7.4, 7.5	Proportional relationships, inversely proportional relationships and the connections to slope.
5	Sections 7.4, 7.5	Proportional relationships, inversely proportional relationships and the connections to slope.
6	Sections 2.4, 7.6	Reasoning about and problem solving with percent.
7	Section 8.3	Divisibility tests for 2, 3, 4, 5, 9 and 10.
8	Section 8.5	Greatest common factors and least common multiples, including connections to prime factorizations and problem solving.
9	Section 8.5	Greatest common factors and least common multiples, including connections to prime factorizations and problem solving.
10	Sections 9.1, 9.2, 9.3	Numerical expressions, expressions with variables and equations.
11	Section 9.5	Recognizing patterns and algebraic reasoning in the contexts of patterns.
12	Sections 9.6, 9.7	General and linear functions
13	Sections 9.6, 9.7	General and linear functions
14	Instructor's Notes	Quadratic Functions
15	Instructor's Notes	Exponential Functions

Method of Assessment

The possible methods of assessment are written individual examinations, quizzes, in-class worksheets or presentations, projects, and homework. One or more midterms and a cumulative final exam are required.

Instructional Mode

The instructional mode for this class is face-to-face. This designation means that the essential academic standards of the course require in-class student engagement, and thus remote instruction is not appropriate.