

OFFICIAL SYLLABUS
Math 112a – Mathematics for Elementary Teaching

Adopted – Spring 2015
(Committee: Drs. M. Hasty, C. Traub, T. Voepel*)

Catalog Description

These courses (Math 112a & 112b) are designed to meet state certification standards for elementary teachers. a) Number Sense and Algebra; b) Probability, Statistics, and Geometry.
Prerequisites: None.

Textbook

Mathematics for Elementary Teachers: A Conceptual Approach, Ninth Edition, by Bennett, Burton, and Nelson. McGraw Hill. ISBN: 978-0073519579

Course Outline and Topics

- Chapter 1 – Problem Solving
 - 1.1 Introduction to Problem Solving
 - 1.2 Patterns and Problem Solving
 - 1.3 Problem Solving with Algebra
- Chapter 2 – Sets, Functions, and Reasoning
 - 2.1 Sets and Venn Diagrams
 - 2.2 Functions and Graphs
 - 2.3 Introduction to Deductive Reasoning
- Chapter 3 – Whole Numbers
 - 3.1 Numeration Systems
 - 3.2 Addition and Subtraction
 - 3.3 Multiplication
 - 3.4 Division and Exponents
- Chapter 4 – Number Theory
 - 4.1 Factors and Multiples
 - 4.2 Greatest Common Divisor and Least Common Multiple
- Chapter 5 – Integers and Fractions
 - 5.1 Integers
 - 5.2 Introduction to Fractions
 - 5.3 Operations with Fractions
- Chapter 6 – Decimals: Rational and Irrational Numbers
 - 6.1 Decimals and Rational Numbers
 - 6.2 Operations with Decimals
 - 6.3 Ratio, Percent, and Scientific Notation
 - 6.4 Irrational and Real Numbers

Course Objectives

This is one of two courses designed to meet the state certification standards for elementary teachers. This course will focus on the number sense and algebra skills essential for elementary teachers. The material will be taught using manipulatives, hands on activities, and technology whenever possible.

* Originally approved Fall 2010; prerequisites changed and objectives added by Department consent in Fall 2013; approved for use by University in Spring 2015.

A student who completes this course is expected to:

1. solve problems and analyze solutions of problems that require logic
2. gain knowledge and understanding of the mathematical content that is taught in elementary schools
3. develop an appreciation of and interest in the history, structure, and applications of mathematics
4. develop an in-depth understanding of the fundamental operations of arithmetic of real numbers
5. develop an understanding of the nature and structure of the real number system
6. study and interpret graphs and prepare graphs to display information
7. model mathematical concepts in a variety of ways
8. prepare a collection of articles from professional journals and publications

Any instructor should cover all of the material specified, additional sections are optional.