

**Mathematics Department
University of Wisconsin Oshkosh**

**General Syllabus for
Math 110 Number Systems**

Course Description:

In this course we will *do* mathematics everyday, and we will discuss the mathematical work of teaching. This means that we will think about problems, conjecture, reason, and make arguments. We will learn to communicate our ideas using the language of mathematics, and we will learn to listen and evaluate the mathematical thinking of others.

The content of the course is focused on important mathematics of the elementary school curriculum as described in the National Council of Teachers of Mathematics (NCTM Principles and Standards (2000): ideas about natural numbers, integers, rational and real numbers; number theory; operations; and the analysis of algorithms.

Prerequisite:

Students must either place above the remedial level or complete Mathematics 103 with a grade of C or better.

Description of Students Who Take the Course:

This is a required course for all Elementary Education or Special Education Majors. Elementary Education Majors must successfully complete this course with a C or better to go on to take 211 and 217. Special Education Majors must successfully complete this course with a C or better to go on to take 211.

General Goals and Objective for the Course:

Students in this course will:

- Create a variety of problem solving strategies;
- Use quantitative methods and symbol systems;
- Distinguish between, and effectively use, both inductive and deductive reasoning;
- Learn to make mathematical arguments to justify solutions, and come to understand, through logic and structure as opposed to another authority, when a solution is correct and complete;
- Communicate mathematics both orally and in writing using the language of mathematicians;
- Learn to listen, evaluate and respond effectively to the mathematical ideas of peers;
- Build connections among, and work with, a variety of representations;
- Understand children's models and the mathematical work of teaching;
- Gain an appreciation for the beauty and importance of mathematics.

Textbooks and Other Required Materials Recently Used:

- *Number Systems: Course Materials for Math 110*, edited by J. Szydlik.
- *Elementary Mathematics for Teachers*, by T. Parker and S. Baldrige, 2003 (along with the packaged Primary Mathematics materials from SingaporeMath)

Description of Specific Content:

- Problem Solving and the Language of Mathematics
- Place Value and Models for Arithmetic (including Children's Models)
- Analysis of Algorithms
- Prealgebra and a look at Algebraic Structure
- Factors, Primes, Divisibility, GCF, LCM, and the Fundamental Theorem of Arithmetic
- Models for Fractions
- Models for Integers
- Rational and Real Numbers

Variation by Instructor:

Although this course has a common content syllabus across sections and course coordination occurs, teaching methodology and evaluation policies may vary. Evaluation may include quizzes, exams, a comprehensive final, and the collection of homework and problem write-ups. In addition, instructors of this course may make reading and writing assignments.

Students should consult the individual course syllabus for more information.

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