

MATH 181
Fundamentals of Mathematics I
General Syllabus

Course Number and Prefix:	MATH 181
Title:	Fundamentals of Mathematics I
Credits:	3 credits
Prerequisites:	None

Course Description: This is the first of a 3-course sequence particularly pertinent to prospective arithmetic teachers, presenting fundamentals of mathematics from a modern approach. Exploration of elementary mathematical structures, including natural numbers, the integers, and rational numbers, via analyses of patterns, relationships, and properties. Mathematics content will be presented in a problem solving and exploratory context.

Course Obligations: As part of the General Education Program, successful completion of MATH 181/182 satisfies the Category 2 Mathematics Skills Area requirement. The ultimate goal of this course sequence is to increase content knowledge, broaden teaching practices and foster confidence in teachers of elementary mathematics. MATH 181 course content involves:

- use of mathematics to structure understanding of and investigate questions in the world around us.
- treating mathematical content at an appropriate level.
- use of numerical, graphical and algebraic representations.
- interpretation of data, analysis of graphical information and communication of process and solutions in written and oral form.
- use of mathematics to formulate and solve problems.
- using technology such as calculators and computers to support use of mathematics.

Course Objectives: Upon successful completion of this course, students will be able to:

- solve mathematical problems using a variety of strategies.
- use patterns and representations to model and explore real-world phenomena.
- operate in decimal and non-decimal bases.
- use appropriate models for exploring number systems.
- solve classical problems in elementary number theory.
- use an activity-oriented approach to learning and teaching mathematics.

Course Requirements:

- Comprehensive final examination
- Midterm
- Homework and assignments
- Project
- Attendance
- Participation

Method of Evaluation:

- $94\% < A$
- $84\% < B \leq 94\%$
- $74\% < C \leq 84\%$
- $64\% < D \leq 74\%$
- $F \leq 64\%$

To calculate the grade, divide the total number of points earned by the total number of points possible and express the answer as a percent.

Outline of Course Content:

- Problem Solving
 - Introduction to problem solving
 - Patterns and problem solving
- Whole numbers
 - Numeration systems
 - Addition
 - Subtraction
 - Multiplication
 - Division
 - Exponents
- Number theory
 - Factors and multiples
 - Greatest common divisor and least common multiple
- Integers and Fractions
 - Integers
 - Introduction to fractions
 - Operations with fractions
- Decimals: Rational and irrational numbers
 - Decimals and rational numbers
 - Operations with decimals
 - Ratio, percent and scientific notation
 - Irrational and real numbers

Required Texts and Materials:

- Bennett, A. & Nelson, L. (2000). Mathematics for elementary teachers: A conceptual approach (5th Ed.). Madison, WI: McGraw Hill.
- Ashlock, R. (2001). Error patterns on computation (8th Ed.). Upper Saddle River, NJ: Prentice-Hall.

Students who believe that they may need accommodations in this class are encouraged to contact the Disability Access Center (970) 351-2289 as soon as possible to ensure that accommodations are implemented in a timely fashion.