**Departmental Syllabus**  
**Math 1030 – Mathematics for Educators I**

**Textbooks:**  


**Prerequisites:** MATH 15 with a grade of "C-" or better or mathematics proficiency level of 15 or above.

**Course Description:** Math 1030 is the first semester in a three-semester sequence of integrated content and methods courses for preservice teachers. It is open only to students in elementary education pursuing certification levels B – 11 or 10 – 14. (The course is not intended for students pursuing certification level 10 – 21.) Topics covered include problem solving; history and development of number systems; sets; functions and algebraic reasoning; and fundamental operations with whole numbers and integers. Throughout the course, students will be expected to explain their reasoning using appropriate vocabulary and notation.

**Student Learning Outcomes:** Students should be able to:
- learn to teach mathematics for understanding;
- gain a conceptual understanding of the domain addressed in the course; and
- work toward becoming a reflective practitioner.

**Test-out Policy:** Math 1030 is an integrated content and methods course for preservice teachers. Much of the content material will be embedded in in-class activities that model a variety of teaching methods. As a result, students will be actively involved in doing mathematics during the class period. Because of the significant amount of in-class participation, a student will not be allowed to test out of this course.

**Calculators:** A calculator may be required. Calculators with Computer Algebra Systems (CAS), (e.g. the TI-89, TI-92 and TI-Nspire with CAS keypad, or their equivalent), are not allowed in any math classes. On occasion, individual instructors may restrict the use of any type of calculator.

**Topics to be covered:**

I. **Problem Solving** – Problem solving is a large component of this course (as well as in Math 2030 and Math 3030). As such, we begin this course with a unit on problem solving. Students will be expected to explain their reasoning using appropriate vocabulary and notation.

**Chapter 1: An Introduction to Problem Solving**
1.1  Mathematics and Problem Solving
1.2  Exploration of Patterns
II. **Sets and Numeration Systems** – In this unit we develop some of the foundational work for whole number operations. Students will be expected to justify their work using appropriate vocabulary and notation.

**Chapter 2: Introduction to Logic and Sets**

- 2.1 Reasoning and Logic: An Introduction
- 2.2 Describing Sets
- 2.3 Other Set Operations and Their Properties

III. **Whole Numbers** – In this unit we develop the whole number operations. We begin by modeling whole-number operations. This is followed by development of the properties and algorithms for whole-number operations. Students will be expected to justify their work using appropriate vocabulary and notation.

**Chapter 3: Numeration and Whole Number Operations**

- 3.1 Numeration Systems
- 3.2 Addition and Subtraction of Whole Numbers
- 3.3 Multiplication and Division of Whole Numbers
- 3.4 Addition and Subtraction Algorithms, Mental Computation, and Estimation
- 3.5 Multiplication and Division Algorithms, Mental Computation, and Estimation

IV. **Integers** – In this unit we explore integers. Again we will model integer operations before developing the properties and algorithms of integers. Students will be expected to justify their work using appropriate vocabulary and notation.

**Chapter 5: Integers**

- 5.1 Addition and Subtraction of Integers
- 5.2 Multiplication and Division of Integers

If you require an accommodation due to a disability, please make an appointment to see me as soon as possible to discuss arrangements for the accommodations. You will need a Verified Individualized Services and Accommodations (VISA) form from Services for Students with Disabilities.