

Department of Mathematics, Computer & Information Science

**FOUNDATIONS OF MATHEMATICS I MA2010**

**Departmental Syllabus**

**TEXTBOOK: A Problem Solving Approach to Mathematics for Elementary School Teacher**, 9th Edition, by Rick Billstein, Shlomo Libeskind, and Johnny W. Lott

*Prerequisite:* Grade of C or higher in College Algebra-**MA1020**.

**COURSE DESCRIPTION:** This course is designed for students majoring in elementary education. The course emphasizes the underlying logic of the mathematics taught at the elementary school level. It focuses on problem solving techniques as an integral part of mathematics and explores various methods of teaching techniques to instill a good mathematical understanding for the elementary school student. The course focuses on the recommendations of the National Council of Teachers of Mathematics Standards. Topics include problem solving, logic, set operations, whole number algorithms, rational numbers, decimals and percents. Calculator use (ex. TI-30X) is also presented.

**ATTENDANCE:** Class attendance is required and a record of attendance will be kept. If you miss a class it is your responsibility to find out what material was covered in class, what the homework was and if any announcements have been made about the schedule for upcoming exams.

**COURSE EVALUATION & GRADING:** Your grade will be based on exams, quizzes, class work, and homework. There will be in class cumulative final exam. The grading scale is as follows:

<b>A</b> = [93, 100]	<b>B<sup>+</sup></b> = [87, 89]	<b>C<sup>+</sup></b> = [77, 79]	<b>D<sup>+</sup></b> = [67, 69]	
<b>A<sup>-</sup></b> = [90, 92]	<b>B</b> = [83, 86]	<b>C</b> = [73, 76]	<b>D</b> = [63, 66]	<b>F</b> = [0, 59]
	<b>B<sup>-</sup></b> = [80, 82]	<b>C<sup>-</sup></b> = [70, 72]	<b>D<sup>-</sup></b> = [60, 62]	

**TUTORIAL:** Drop-in tutorial is available in the mathematics learning center, Room A118.

**WITDRAWALS:** If you decide to withdraw from this course, you must complete an official withdrawal form at the office of the registrar to receive a **W** in this course.

**ACCOMMODATIONS FOR STUDENTS WITH SPECIAL NEEDS:** If you have or suspect you may have a physical, psychological, medical or learning disability that may impact your course work, please contact The Office of Services for Students with Disabilities (OSSD), Phone: 516-876-3009, Fax: 516-876-3005, TTD: 516-876-3083. All support services are free and all contacts with the OSSD are strictly confidential.

## TOPICS TO BE COVERED

*Textbook* **A Problem Solving Approach to Mathematics for Elementary School Teacher**,  
9th Edition, by Rick Billstein, Shlomo Libeskind, and Johnny W. Lott

### **Chapter 1 AN INTRODUCTION TO PROBLEM SOLVING**

- 1.1 Problem Solving
- 1.2 Explorations with Patterns
- 1.3 Algebraic Thinking
- 1.4 Logic

### **Chapter 2 SETS, WHOLE NUMBERS AND FUNCTIONS**

- 2.2 Set Operations
- 2.3 Addition and Subtraction of Whole Numbers
- 2.4 Multiplication and Division of Whole Numbers
- 2.5 Functions

### **Chapter 3 NUMERATION SYSTEMS AND WHOLE NUMBER COMPUTATIONS**

- 3.1 Numeration Systems
- 3.2 Algorithms for Whole Number Addition and Subtraction
- 3.3 Algorithms for Whole Number Multiplication and Division
- 3.4 Estimation for Whole Number Operations

### **Chapter 4 INTEGERS AND NUMBER THEORY**

- 4.1 Addition and Subtraction of Integers
- 4.2 Multiplication and Division of Integers
- 4.3 Divisibility
- 4.4 Prime and Composite Numbers
- 4.5 Greatest Common Divisor and Least Common Multiple
- 4.6 Clock and Modular Arithmetic

### **Chapter 5 RATIONAL NUMBERS AS FRACTIONS**

- 5.1 Rational Numbers
- 5.2 Addition and Subtraction of Rational Numbers
- 5.3 Multiplication and Division of Rational Numbers
- 5.4 Proportional Reasoning

### **Chapter 6 DECIMALS, PERCENTS, AND REAL NUMBERS**

- 6.1 Introduction to Decimals
- 6.2 Operations on Decimals
- 6.3 Repeating Decimals
- 6.4 Real Numbers
- 6.5 Percents