SUNY OLD WESTBURY

DEPARTMENT OF MATHEMATICS AND COMPUTER & INFORMATION SCIENCE

FOUNDATIONS OF MATHEMATICS I MA2010

Departmental Syllabus

TEXTBOOK: **Problem Solving Approach to Mathematics for Elementary School Teachers,** 12th Edition, by Rick Billstein, Shlomo Libeskind, Johnny W. Lott, Pearson Publication, ISBN-13: 9780321990594

Prerequisite: Grade of C or higher in College Algebra (MA1020)

COURSE DESCRIPTION: A course designed primarily for students majoring in elementary education. MA2010 covers fundamental theory, historical context and underlying logic of mathematics taught in elementary school. Content is intended to complement the recommendations in the National Council of Teachers of Mathematics Standards (NCTM), and emphasis is placed on problem solving and communication in mathematics. Topics studied include introductory problem solving, functions, number systems, the operations and properties of arithmetic, estimation, and selected topics from set theory and number theory.

COURSE EVALUATION & GRADING: Course grade will be based on midterm exams, quizzes, assignments, and Final Exam. The Final exam is **cumulative** and it counts at least **30**% of the course grade. The grading scale is as follows:

A = [94, 100]	**B** $^{+}$ = [87, 89]	**C** $^{+}$ = [77, 79]	**D** $^{+}$ = [67, 69]	**F** = [0, 59]
A^{-} = [90, 93]	**B** = [84, 86]	**C** = [74, 76]	**D** = [64, 66]	
	B $^{-}$ = [80, 83]	**C** $^{-}$ = [70, 73]	**D** $^{-}$ = [60, 63]	

TUTORIAL: Drop-in tutorial is available in the Mathematics Learning Center.

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 Stacey DeFelice, Director, The Office of Services for Students with Disabilities (OSSD), NAB, 2065, Phone: 516-628-5666, Fax (516) 876-3005, TTD: (516) 876-3083. E-mail: defelices@oldwestbury.edu. The office will help you determine if you qualify for accommodations and assist you with the process of accessing them. All support services are free and all contacts with the OSSD are strictly confidential.

TOPICS TO BE COVERED

TEXTBOOK: **Problem Solving Approach to Mathematics for Elementary School Teachers,** 12th Edition, by Rick Billstein, Shlomo Libeskind, Johnny W. Lott, Pearson Publication, ISBN-13: 9780321990594

1**. An Introduction to Problem Solving**
- 1.1 Mathematics and Problem Solving
- 1.2 Explorations with Patterns and Algebraic Thinking

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

3**. Numeration Systems 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

4**. Number Theory**
- 4.1 Divisibility
- 4.2 Prime and Composite Numbers
- 4.3 Greatest Common Divisor and Least Common Multiple

5**. Integers**
- 5.1 Addition and Subtraction of Integers
- 5.2 Multiplication and Division of Integers

6**. Rational Numbers and Proportional Reasoning**
- 6.1 The Set of Rational Numbers
- 6.2 Addition, Subtraction, and Estimation with Rational Numbers
- 6.3 Multiplication, Division, and Estimation with Rational Numbers
- 6.4 Proportional Reasoning

7**. Rational Numbers as Decimals and Percents**
- 7.1 Introduction to Finite Decimals
- 7.2 Operations on Decimals
- 7.3 Repeating Decimals
- 7.4 Percents and Interest

8**. Real Numbers and Algebraic Thinking**
- 8.1 Real Numbers
- 8.2 Variables
- 8.3 Equations
- 8.4 Functions
- 8.5 Equations in a Cartesian Coordinate System