OFFICIAL SYLLABUS

MATH 112C – MATHEMATICS FOR ELEMENTARY TEACHING

Catalog Description. One of three courses designed to meet state certification standards for elementary teachers. College algebra skills essential for elementary teachers.

Prerequisite. Math 112a and 112b with a C or better.

Textbooks.

Algebra for Elementary and Middle School Teachers, Second Edition, by Stump, Roebuck, Bishop. Pearson. ISBN: 978-0558387778

College Algebra, Ninth Edition, by Larson. Cengage. ISBN: 978-1133963028

Course outline

Week	Larson text	Stump, Roebuck, & Bishop text
1	Chapter P – Prerequisites 1.1 Graphs of Equations	CH 1 Problem Solving Read pages 1-8 Activities 1.1, 1.7, 1.10#1, 1.11, 1.12
2	1.2 Linear Equations in One Variable 1.3 Modeling with Linear Equations	CH 10 Properties of Numbers and Operations Read pages 216-221 Activities 10.1, 10.2, 10.3, 10.5, 10.6
3	1.4 Quadratic Equations and Applications 1.5 Complex Numbers 1.6 Other Types of Equations	CH 2 Solving Equations Read pages 31-34 Activities 2.1, 2.5, 2.7, 2.8
4	1.7 Linear Equations in One Variable 1.8 Other Types of Inequalities	CH 3 Introduction to Patterns Read pages 50-52 Activities 3.1, 3.2, 3.5, 3.6
5	2.1 Linear Functions in Two Variables 2.2 Functions 2.3 Analyzing Graphs of Functions	CH 6 Representing Functional Relationships Read pages 107-112 Activities 6.1, 6.2, 6.3, 6.6, 6.7
6	2.4 A Library of Parent Functions 2.5 Transformations of Functions 2.6 Combinations of Functions:	CH 7 Linear Functions Read pages 137-141 Activities 7.2, 7.3, 7.5, 7.7, 7.8

	Composite Functions	
7	2.7 Inverse Functions 3.1 Quadratic Functions and Models	CH 4 Growing Patterns Read pages 63-66 Activities 4.2, 4.4, 4.9, 4.10
8	3.2 Polynomial Functions of Higher Degree 3.3 Polynomial and Synthetic Division 3.4 Zeros of Polynomial Functions	CH 8 Quadratic Functions Read pages 158-163 Activities 8.1, 8.5, 8.6, 8.8, 8.9
9	3.5 Mathematical Modeling and Variation 4.1 Rational Functions and Asymptotes	CH 8 continued
10	4.2 Graphs of Rational Functions 4.3 Conics	CH 5 Sequences Read pages 91-95 Activities 5.1, 5.2, 5.6, 5.7
11	4.4 Translation of Conics 5.1 Exponential Functions and Their Graphs	CH 9 Exponential Functions Read pages 186-191 Activities 9.1, 9.2, 9.7, 9.10, 9.11
12	5.2 Logarithmic Functions and Their Graphs 5.3 Properties of Logarithms	CH 9 continued
13	5.4 Exponential and Logarithmic Equations 6.2 Two-Variable Linear Systems	CH 11 Algebraic Proof Read pages 239-242 Activities 11.1, 11.3, 11.7, 11.8
14	6.3 Multivariable Linear Systems 7.1 Matrices and Systems of Equations	
15	Review	

This outline is intended to show the flow of topics; the actual pacing of material (including exams) is at the discretion of the instructor.

Course objectives

This is one of three courses designed to meet the state certification standards for elementary teachers. This course will focus on the algebra skills essential for elementary teachers. The material will be taught using manipulatives, hands on activities, and technology whenever possible.

A student who completes this course is expected to:

1. solve problems and analyze solutions of problems that require logic
2. gain knowledge and understanding of the mathematical content that is taught in elementary schools
3. identify, solve and apply linear and absolute value equations and

inequalities

4. identify and interpret the domain, inverse (if it exists) and graph polynomial, rational, exponential and logarithmic equations
5. identify the sum, difference, quotient, product of two functions and the resulting domain
6. identify the composition of two functions and the resulting domain
7. identify and solve polynomial, rational, exponential, and logarithmic equations and inequalities, and apply these methods in solving word problems
8. solve systems of linear equations using the augmented matrix method
9. recognize and graph conic sections
10. input and interpret data and use technology to find the appropriate regression
11. model mathematical concepts in a variety of ways