Spokane Community College

COURSE LEARNING OUTCOMES (CLO) AND OUTLINE

Course Title: Essentials of Algebra 1
Prefix and Course Number: MATH 71
Version Date: 1/28/2022

Course Learning Outcomes

By the end of this course, a student should be able to:

1. Create scatterplots, linear models and regression by hand and with technology to make predictions of future situations by utilizing the correlation coefficient.

2. Apply algebraic concepts to solve linear equations and inequalities, and systems of linear equations.

3. Perform operations of addition, subtraction, multiplication, and division on polynomial expressions and apply properties of exponents to simplify.

4. Apply appropriate techniques to factor polynomial expressions.

5. Identify, evaluate, and graph linear and quadratic functions in both vertex and standard form, identifying both domain, range, and other key features.

6. Solve applications involving number relations, perimeter, area, mixture, investments, motion, variation, and other concepts.

7. Simplify radical expressions that result in both real and complex numbers.

Course Outline:

I. Introduction to Modeling
- **A.** Create models from data.
- **B.** Identify variables, constants, inputs and outputs.
- **C.** Create number lines and scatterplots
- **D.** Understand the difference between interpolation and extrapolation and when a model breaks down.
- **E.** Introduction to the Library of Base Functions

II. Linear
- **A.** Solve linear equations and inequalities
- **B.** Linear Functions
- **C.** Graph lines, identifying domain, range and other key features
- **D.** Equations of Lines
- **E.** Systems of Equations
- **F.** Regression, Modeling and Applications

III. Polynomials
- **A.** Add, Subtract, and Multiply polynomial expressions and functions
- **B.** Powers of Polynomials, product of binomial conjugates

- **C.** Properties of Exponents
- **D.** Dividing Polynomials: long division and synthetic division

IV. Factoring

- **A.** Greatest Common Factor
- **B.** Factoring Trinomials
- **C.** Factoring Binomials (Diff. of Squares, Sum/Diff. of cubes)
- **D.** Use factoring to solve polynomial equations
- **E.** Use factoring to make predictions about quadratic models

V. Introduction to Quadratics and Radicals

- **A.** Definition of Quadratic Function
- **B.** Graph Quadratic Function in both vertex and standard form, identifying domain and range, and other key features.
- **C.** Simplify radicals, resulting in both real and complex numbers