SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

MAT-086

Course Number: Math 026   Class/Lect. Hours: 3   Lab Hours: 0   Credits: 3   Dept.: Mathematics

Course Title: Algebra for Educators   Semester: Spring   Year: 2017

Course Description, Prerequisite, Corequisite:

COURSE CATALOG DESCRIPTION

This is a pre-college level lecture course in elementary algebra. Topics include the real number system, operations with real numbers, and simplification of algebraic expressions, solving equations and inequalities, applications and problem solving. Topics also include graphs of linear equations, exponents and scientific notation, operations with polynomials, factoring polynomials, solving quadratic equations by factoring, and applications and problem solving. **This is a developmental course. Credit for this course will not be counted toward fulfilling graduation requirements at STCC.**

Prerequisites: Completion of ARTH 073 or ARTH 078 with C- or better,
or Placement Level ALGB 081

OBJECTIVES/COMPETENCIES

Course Objectives	Competencies
Chapter 1: Introduction to Real Numbers and Algebraic Expression Objectives: 1. Evaluate variable expressions. 2. Translate phrases to algebraic expressions. 3. Solve problems involving order. 4. Find the absolute value of a number. 5. Evaluate expressions involving addition of signed numbers. 6. Find the opposite of a number 7. Evaluate expressions involving subtraction of signed numbers. 8. Simplify numeric expressions. 9. Evaluate expressions involving multiplication of signed numbers.	Same as Algebra 1 and 2

10.   Evaluate expressions involving multiplication or more than two signed numbers.
11.   Evaluate expressions involving division of signed numbers.
12.   Find the reciprocal of a number.
13.   Divide signed fractions.
14.   Remove common factors from an expression.
15.   Combine like terms.
16.   Apply distributive law to expand a product.
17.   Simplify expressions involving grouping symbols.
18.   Apply order of operations to evaluate an expression.

Chapter 2: Solving Equations and Inequalities
Objectives:
1.   Solve equations of the form $x + a = b$..
3.   Solve equations of the form $a\,x = b$.
4.   Solve equations of the form $a/x = b$.
5.   Solve equations of the form $(a/b)\,x = c$.
6.   Solve linear equations.
7.   Solve equations with parentheses.
8.   Solve applied problems.
9.   Solve equations involving percent.
10.   Solve applied problems involving percents.
11.   Solve literal equations and formulas.
12.   Solve linear inequalities.
13.   Graph number line inequality.
14.   Translate verbal statement to an inequality.

Chapter 3: Graphing Linear Equations and Inequalities
Objectives:
1.   Locate the quadrant for a given point.
2.   Determine if a given point satisfies an equation.
3.   Find y given $a\,x + b\,y = c$.
4.   Find intercepts given an equation.
5.   Find intercepts given a graph.
6.   Given an equation plot its graph.
7.   Determine if an equation has a vertical line graph
8.   Determine if an equation has a horizontal line graph.
9.   Given a horizontal or vertical line graph, determine the equation.
10.   Find the slope of the line through 2 points.
11.   Find the slope given the equation of the line.
12.   Find the equation of the line given a point and the slope.
13   Find the equation of the line through 2 given points.
14.   Identify parallel and perpendicular lines given the equations of 2 lines.

15.   Determine if a point is a solution of a linear inequality.
16.   Plot the graph of a linear inequality.

Chapter 5: Exponents and Polynomials
Objectives:
1.   Evaluate exponential expressions.
2.   Evaluate x^0.
3.   Simplify expressions involving negative exponents.
4.   Multiply like bases.
5.   Divide like bases.
6.   Express a number in scientific notation.
7.   Apply exponent laws to simplify an expression.
8.   Collect like terms.
9.   Add polynomials.
10.   Subtract polynomials.:
11.   Multiply monomials.
12.   Multiply binomials.
13.   Multiply the difference of two squares.
14.   Multiply perfect squares.
15.   Evaluate polynomials involving more then one variable.
16.   Collect like terms for expressions involving more than one variable.
17.   Multiply binomials for expressions involving more than one variable.
18.   Divide a monomial by a monomial.
19.   Divide a polynomial by a monomial.

Chapter 6: Polynomials: Factoring
Objective:
1.   Factor out common factors.
2.   Factor trinomials of the form $x^2 + bx + c$.
3.   Factor the difference of two squares.
4.   Factor perfect square trinomial

Chapter 7: Rational Expressions and Equations
Objectives:
1.   Simplify rational expressions.
2.   Multiply and simplify rational expressions.
3.   Divide and simplify rational expressions.

Chapter 8: Radical Expressions and Equations
Objectives:
1.   Find the square root of perfect squares and opposite of the square root of
        perfect squares.
2.   Simplify square roots.

Course Number: _____

3. Add and subtract radical expressions.
4. Multiply and divide radical expressions; rationalize denominators
5. Solve radical equations.
6. Solve applications using radical equations
7. Solve formulas including radical expressions