



El Camino College
COURSE OUTLINE OF RECORD – Official

Subject:	PASS
Course Number:	514
Descriptive Title:	Algebra Academy
Division:	Library and Learning Resources
Department:	Pathways to Academic Success
Course Disciplines:	Mathematical Sciences
Catalog Description:	This course covers real number solutions and applications of linear equations, quadratic equations, linear inequalities, and systems of linear equations.
Prerequisite:	
Co-requisite:	
Recommended Preparation:	
Enrollment Limitation:	
Hours Lecture (per week):	2.33
Hours Laboratory (per week):	0.3
Outside Study Hours:	0
Total Course Hours:	48
Course Units:	0 units
Grading Method:	Pass/No Pass/SP
Credit Status:	Noncredit
Transfer CSU:	No
Effective Date:	
Transfer UC:	No
Effective Date:	
General Education ECC:	
Term:	
Other:	
CSU GE:	
Term:	
Other:	
IGETC:	
Term:	
Other:	
Student Learning Outcomes:	Upon completion of the course, students will be able to:

	<p>1) simplify (or evaluate) the expression correctly, performing one operation at a time and without utilizing the commutative, associative, or distributive properties.</p> <p>2) solved in two steps or a linear expression that can be simplified in one step.</p> <p>3) demonstrate their ability to correctly identify each, to solve and check the equation and to simplify the expression, neatly showing all steps in order</p> <p>4) demonstrates the ability to interpret, draw conclusions or solve problems using visual or graphical representations.</p>
<p>Course Objectives:</p>	<p>1) Recognize functional relationships in the form of graphs, data or symbolic equations.</p> <p>2) Graph a variety of functions and relations and draw connections between these graphs and solutions to problems.</p> <p>3) Using numerical, symbolic and graphical methods, model application problems, solve them and interpret the results in the context of the problem.</p> <p>4) Find perimeters, areas, and volumes of various geometrical shapes and use in applications.</p> <p>5) Formulate mathematical representations of real-world applications, including the recognition of proportional relationships.</p>
<p>Major Topics:</p>	<p>I. BASIC OPERATIONS AND MANIPULATIONS WITH ALGEBRAIC EXPRESSIONS (14 hours, Lecture)</p> <p>A. Evaluation of algebraic expressions using order of operations.</p> <p>B. Identification of constants, variables, terms, variable terms, the degree of a variable term, the coefficient of a variable term in an algebraic expression</p> <p>C. Identify monomials, binomials and trinomials.</p> <p>D. Arithmetic operations on polynomials, including long division and use of integer exponents.</p> <p>E. Simplification of algebraic expressions with the appropriate use of the commutative, associative, and distributive properties of real numbers.</p> <p>F. Factoring polynomials (including those with common monomial factors, the difference of squares and perfect square trinomials).</p> <p>G. Factoring simple and general trinomials by grouping in simple and general trinomials.</p> <p>H. Operations on rational expressions.</p> <p>I. Operations on radical expressions.</p> <p>II) OPERATIONAL & APPLICATIONS (2 hours, Lab)</p> <p>A. Basic Operations</p>

B. Manipulations with Algebraic Expressions

III) EQUATIONS AND INEQUALITIES (11 hours, Lecture)

A. Identify and simplify linear expressions. Solve linear equations and inequalities

B. Using the properties of equality, identify equivalent equations, solve linear equations and inequalities.

C. Solve 2-by-2 linear systems of equations using substitution or linear combinations (also known as elimination or addition).

D. Solve for a specified variable in an equation containing more than one variable.

E. Solve quadratic equations using factoring, the square root property, completing the square, or the quadratic formula.

IV) GRAPHING (8 hours, Lecture)

A. Graph ordered pairs on a coordinate plane.

B. Graph the solution of a linear inequality in one variable on a number line.

C. Determine the slope of a line given its graph or given two points on the line.

D. Graph linear equations in standard, slope-intercept and point slope form.

E. Write the equation of a line given:

a) a point and its slope,

b) its slope and y-intercept, or

c) two points on the line.

F. Solve a 2-by-2 linear system of equations by graphing.

V) OPERATIONAL & APPLICATIONS (2 hours, Lab)

A. Graphing

B. Solving 2-by-2 linear system of equation by graphing.

VI) FUNCTIONS (5 hours, Lecture)

A. Definitions of function, domain and range

B. Function notation

	<p>C. Functions as rules, as sets of ordered pairs, as algebraic equations, and as graphs. Function types include polynomial, power, rational, radical, exponential, logarithmic and the absolute value</p> <p>D. Operations on functions, including addition, subtraction, multiplication, division, exponentiation.</p> <p>E. One-to-one functions</p> <p>VII) OPERATIONAL & APPLICATIONS (2 hours, Lab)</p> <p>A. Domain and Range</p> <p>B. Operations on Functions</p> <p>VIII) APPLICATIONS (4 hours, Lecture)</p> <p>A. Translate a given English expression or a word problem into a mathematical expression, equation, or inequality.</p> <p>B. Set up and solve geometric problems using formulas for perimeter, area, volume, and the Pythagorean Theorem.</p> <p>C. Set up and solve a variety of application problems including those involving percentage relationships and ratio and proportions. Examples should include "work," "distance," and "mixture" problems.</p>
Total Lecture Hours:	42
Total Laboratory Hours:	6
Total Hours:	48
Primary Method of Evaluation:	2) Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	Graph the linear equation. $y - 6 = 0$
Critical Thinking Assignment 1:	If 8 is added to twice a number and this sum is multiplied by 4, the result is the same as if the number is multiplied by 4 and 8 is added to the product. What is the number?
Critical Thinking Assignment 2:	The U.S. Senate has 100 members. After a certain elections, there were 12 more Democrats than Republicans, with no other parties represented. How many members of each party were there in the Senate?
Other Evaluation Methods:	Class Performance, Completion, Homework Problems, Quizzes
If Other:	
Instructional Methods:	Demonstration, Lab, Lecture, Multimedia presentations
If other:	
Work Outside of Class:	Skill practice
If Other:	

Up-To-Date Representative Texts:	Teacher-generated materials
Alternative Texts:	N/A
Required Supplementary Readings:	N/A
Other Required Materials:	
Requisite	
Category	
Requisite course:	
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	
Requisite Skill and Matching skill(s): Bold the requisite skill(s). if applicable	
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Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). if applicable	
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Malinni Roeun
Date:	03/15/2024
Original Board Approval Date:	11/18/2024
Effective Term:	SP 2025