El Camino College
COURSE OUTLINE OF RECORD – Official

Subject:	PASS
Course Number:	516
Descriptive Title:	Intermediate Algebra Academy
Division:	Library and Learning Resources
Department:	Pathways to Academic Success
Course Disciplines:	Mathematical Sciences
Catalog Description:	This course covers a large library of basic functions and graphs to strengthen and expand students' algebra skills.
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:

	1) Use multiple representations to complete application problems.
	2) Able to solve equations and manipulate expressions.
	3) Able to use visual and graphical methods to solve problems.
	4) Identify x-intercept and y-intercept and use x-intercept and y-intercept to graph the line on a given grid.
Course Objectives:	1. Use the properties of the real numbers to evaluate, simplify, and factor algebraic expressions, including expressions with fractions and radicals. 2. Solve linear equations and inequalities, systems of two linear equations with two variables, and quadratic equations. 3. Set up and solve application problems using linear equations and inequalities, systems of two linear equations with two variables, and quadratic equations. 4. Graph linear equations and systems of linear equations by plotting points or by using intercepts and the slope. 5. Carry out numerical operations and manipulate algebraic expressions, including expressions with rational and negative exponents, and complex numbers. 6. Solve a variety of equations and inequalities, as well as systems of equations and inequalities, using algebraic and graphical methods. Types of equations include linear, quadratic, polynomial, rational, radical, and exponential.
Major Topics:	I) BASIC OPERATIONS AND MANIPULATIONS WITH ALGEBRAIC EXPRESSIONS (14 hours, Lecture) A. Evaluation of algebraic expressions using order of operations. B. Identification of constants, variables, terms, variable terms, the degree of a variable term, the coefficient of a variable term in an algebraic expression C. Identify monomials, binomials, and trinomials. D. Arithmetic operations on polynomials, including long division and use of integer Exponents. E. Simplification of algebraic expressions with the appropriate use of the commutative, associative, and distributive properties of real numbers. F. Factoring polynomials (including those with common monomial factors, the difference of squares, and perfect square trinomials).

G. Factoring simple and general trinomials by grouping in simple and general trinomials.

H. Operations on rational expressions I. Operations on radical expressions.

II)   OPERATIONS & APPLICATIONS (2 hours, Lab)

A. Basic Operations

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 inequality
   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)   OPERATIONS & APPLICATIONS (2 hours, Lab)

A. Equations

B. Inequalities

V)   APPLICATIONS (5 hours, Lecture)

A. Translate a given English expression or a word problem into a mathematical expression, equation, or inequality.

B. Set up and solve geometric problems using formulas for perimeter, area, volume, and the Pythagorean Theorem.

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.

VI)   OPERATIONS & APPLICATIONS (2 hours, Lab)

A. Translate application to Mathematical expression.

B. Set up and solve applications with Perimeter, Area, Volume, and Pythagorean Thm.

C. Ratio and Proportion.

VII)   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.

VIII)   FUNCTIONS (4 hours, Lecture)

A. Definitions of function, domain, and range.

B. Function notation.

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.

D. Operations on functions, including addition, subtraction, multiplication, division, exponentiation, and composition

E. One-to-one functions.

Total Lecture Hours:	42
Total Laboratory Hours:	6
Total Hours:	48
Primary Method of Evaluation:	3) Skills demonstration
Typical Assignment Using Primary Method of Evaluation:	**Sketch the graph of the quadratic function.** $f(x) = -x^2 -8x -12$
Critical Thinking Assignment 1:	Solve. $5(x+4) = 7(x-2)$
Critical Thinking Assignment 2:	Newport and Vernonville are 176 miles apart. A car leaves Newport traveling towards Vernonville, and another car leaves Vernonville at the same time, traveling towards Newport The car leaving Newport averages 10 miles per hour more than the other, and they meet after 1 hour and 36 minutes. What are the average speeds of the cars?
Other Evaluation Methods:	Class Performance, Completion, Homework Problems, Quizzes
If Other:	
Instructional Methods:	Discussion, 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:	N/A
Requisite	
Category	
Requisite course:	N/A
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	N/A
Requisite Skill:	N/A
Requisite Skill and Matching skill(s): Bold the requisite skill(s). if applicable	N/A
Requisite course:	N/A
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	N/A
Requisite Skill:	N/A
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). if applicable	N/A
Enrollment Limitations and Category:	N/A
Enrollment Limitations Impact:	N/A
Course Created by:	Malinni Roeun
Date:	03/16/2024
Original Board Approval Date:	11/18/2024
Effective Term:	SP 2025