



El Camino College
COURSE OUTLINE OF RECORD – Official

Subject:	AHSD
Course Number:	515
Descriptive Title:	High School Algebra 2
Division:	Library, Academic Support, and Noncredit
Department:	Adult High School Diploma
Course Disciplines:	Adult High School Diploma
Catalog Description:	This noncredit course covers components of second year algebra. It expands on basic algebra and geometry concepts, including solutions of quadratic equations and functions, equations and inequalities, fractional exponents and exponential functions, polynomials, real numbers, rational and irrational expressions, logarithmic functions, computations, permutations and probabilities, statistics, series and sequences, the complex number system, and trigonometric functions. The course supports student progress toward a high school diploma or equivalent. From 1-10 high school credits can be earned in 15-hour modules.
Prerequisite:	AHSD 513 "Algebra 1B" or placement based on the math assessment process
Co-requisite:	
Recommended Preparation:	
Enrollment Limitation:	
Hours Lecture (per week):	.83 to 8.33
Hours Laboratory (per week):	0
Outside Study Hours:	1.66 to 16.66
Total Course Hours:	15 to 150
Course Units:	0
Grading Method:	Pass/No Pass only
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:	
Cal-GETC:	
Term:	
Other:	
Student Learning Outcomes:	Upon completion of the course, students will be able to: 1. solve and verify algebraic equations and inequalities. 2. perform operations with algebraic expressions and number systems. 3. analyze and solve quantitative problems involving advanced algebraic concepts.
Course Objectives:	1. Solve linear and quadratic equations and inequalities using algebraic methods such as factoring, completing the square, and the quadratic formula. 2. Analyze and graph algebraic functions, including quadratic, exponential, and logarithmic functions, and interpret key features such as intercepts, domain, and range. 3. Perform operations with polynomials, including addition, subtraction, multiplication, and factoring of polynomial expressions. 4. Simplify and evaluate rational expressions and expressions with fractional exponents, applying the laws of exponents where appropriate. 5. Perform computations using real and complex numbers, including operations with imaginary numbers. 6. Apply trigonometric functions and relationships to solve mathematical problems involving angles and triangles. 7. Calculate and interpret permutations and probabilities in basic counting and probability situations. 8. Analyze and solve problems involving sequences, series, and introductory statistical concepts.
Major Topics:	I. Review of Foundational Algebra Concepts (lecture) A. Review of real numbers and order of operations B. Properties of exponents and radicals C. Simplifying algebraic expressions and evaluating formulas II. Linear and Quadratic Equations and Inequalities (lecture) A. Solving linear equations and inequalities B. Solving quadratic equations by factoring, completing the square, and the quadratic formula C. Solving and graphing quadratic inequalities

	III. Functions and Graphing (lecture) A. Concept and notation of functions B. Graphing and analyzing quadratic functions C. Graphing and interpreting exponential and logarithmic functions IV. Polynomials and Polynomial Operations (lecture) A. Adding, subtracting, and multiplying polynomials B. Factoring polynomial expressions C. Solving polynomial equations V. Rational Expressions and Fractional Exponents (lecture) A. Simplifying rational expressions B. Performing operations with rational expressions C. Evaluating expressions with fractional exponents and radicals VI. Complex Number System (lecture) A. Definition and properties of imaginary numbers B. Performing operations with complex numbers C. Solving equations involving complex solutions VII. Trigonometric Functions (lecture) A. Basic trigonometric ratios (sine, cosine, tangent) B. Using trigonometric functions to solve problems involving triangles C. Applications of trigonometric relationships VIII. Probability and Counting Principles (lecture) A. Fundamental counting principle B. Permutations and combinations C. Basic probability concepts and calculations IX. Sequences, Series, and Introductory Statistics (lecture) A. Arithmetic and geometric sequences B. Arithmetic and geometric series C. Basic statistical concepts, data interpretation, and measures of central tendency
Total Lecture Hours:	15 to 150
Total Laboratory Hours:	0
Total Hours:	15 to 150
A.1. Primary Methods of Evaluation (Part 1 - CCN courses only):	
Primary Method of Evaluation:	3) Skills demonstration
Typical Assignment Using Primary Method of Evaluation:	Graph the given systems of equations and inequalities. In 1-2 sentences, explain why systems of equations have only one solution, while systems of inequalities can have multiple solutions. Choose two problems and state their solutions. Finally, create a system of inequalities with three functions that has no solution, and show its graph.

Critical Thinking Assignment 1:	Given three quadratic functions, solve each one as directed on the attached worksheet (using the quadratic formula, factoring, or completing the square). State the vertex, axis of symmetry, and the two x-intercepts you found. Then, write the quadratic function in vertex form and graph it.
Critical Thinking Assignment 2:	Graph the given logarithmic and exponential functions. For #1-6, draw the logarithmic parent function and explain the differences between it and the given logarithmic equations and their graphs (e.g., Which are reflected on the x- or y-axis, and why? How can you tell? Which have vertical stretches or shrink, and why? etc.). Your explanation should be 3-5 sentences. For #7-12, draw the exponential parent function and then explain the differences between it and the given exponential equations and their graphs. Your explanation should also be 3-5 sentences.
Other Evaluation Methods:	Homework Problems, Objective Exam, Quizzes, Written Homework
If Other:	
Instructional Methods:	Demonstration, Discussion, Group Activities, Lecture, Multimedia presentations
If other:	
Work Outside of Class:	Answer questions, Problem solving activity, Required reading, Skill practice, Study
If Other:	
Up-To-Date Representative Texts:	Martin-Gay, Elayne. <i>Intermediate Algebra</i> , 8th Edition. Pearson, 2023
Alternative Texts:	
Required Supplementary Readings:	
Other Required Materials:	
Requisite	Prerequisite
Category	sequential
Requisite course:	AHSD 513 "Algebra 1B"
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	Calculate fractional powers of integers and rational numbers. AHSD 513: Calculate fractional powers of integers and rational numbers. Solve exponential growth and decay word problems. AHSD 513: Solve exponential growth and decay word problems. Define functions with tables and graphs. AHSD 513: Define functions with tables and graphs. Conduct arithmetic operations with radical expressions and binomials containing radicals. AHSD 513: Conduct arithmetic operations with radical expressions and binomials containing radicals. Add, subtract, and multiply polynomials. AHSD 513: Add, subtract, and multiply polynomials.

Requisite Skill:	
Requisite Skill and Matching skill(s): Bold the requisite skill(s). if applicable	
Requisite course:	
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	
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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:	Matthew Kline
Date:	03/06/2026
Original Board Approval Date:	05/20/2026
Effective Term:	FA 2026