



El Camino College
COURSE OUTLINE OF RECORD – Official

Subject:	AHSD
Course Number:	518
Descriptive Title:	High School Integrated Math 3
Division:	Library, Academic Support, and Noncredit
Department:	Adult High School Diploma
Course Disciplines:	Adult High School Diploma
Catalog Description:	This noncredit high school level course builds on prior mathematical knowledge by integrating algebra, geometry, and statistics through problem solving and real-world applications. Topics include equations and inequalities, functions, quadratic and polynomial expressions, rational and radical expressions, logarithms, and trigonometry. Students also explore circles, sequences and series, probability, and statistical reasoning. This course supports progress toward completion of a high school diploma or equivalent. From 1 to 10 high school credits may be earned in 15-hour modules. Note: This course is open entry/open exit.
Prerequisite:	
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/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:	
Cal-GETC:	
Term:	
Other:	
Student Learning Outcomes:	Upon successful completion of the course, students will be able to: 1. solve and analyze algebraic expressions and equations. 2. interpret and graph mathematical functions and models. 3. apply probability, statistics, and trigonometric concepts to analyze data, evaluate outcomes, and solve problems
Course Objectives:	1. Make inferences and justify conclusions from sample survey, experiments, and observational studies. 2. Use probability to evaluate outcomes of decisions. 3. Properties of equality and inequality to solve equations and inequalities which also include absolute value. 4. Identify the zeros of a polynomial function by finding the x-intercepts of its graph. 5. Solve arithmetic operations on polynomials. 6. Use complex numbers in polynomial identities and equations. 7. Graph and simplify rational expressions. 8. Simplify radical expressions and solve radical equations. 9. Use exponents to solve logarithmic equations and logarithms to solve exponential equations 10. Graph exponential and logarithmic functions showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. 11. Apply trigonometry to general triangles including the law of sines and cosines. 12. Identify mathematical patterns found in a sequence and will find a rule to describe the pattern.
Major Topics:	I. Statistical Inference and Data Analysis (lecture) A. Types of statistical studies: surveys, experiments, and observational studies B. Sampling methods and bias C. Drawing conclusions from data D. Interpreting statistical results II. Probability and Decision Making (lecture) A. Basic probability concepts B. Compound probability C. Conditional probability D. Using probability to evaluate outcomes and make decisions III. Equations and Inequalities (lecture) A. Properties of equality and inequality B. Solving linear equations and inequalities C. Solving absolute value equations and inequalities D. Applications of equations and inequalities IV. Polynomial Functions and Operations (lecture) A. Polynomial expressions and operations B. Arithmetic operations with polynomials C. Polynomial identities D. Zeros of polynomial functions E. Identifying x-intercepts from graphs V. Complex Numbers (lecture) A. Definition of imaginary and complex numbers

	B. Operations with complex numbers C. Using complex numbers in polynomial equations VI. Rational Expressions and Functions (lecture) A. Simplifying rational expressions B. Graphing rational functions C. Identifying asymptotes and intercepts D. Applications of rational functions VII. Radical Expressions and Equations (lecture) A. Simplifying radical expressions B. Operations with radicals C. Solving radical equations D. Applications of radical expressions VIII. Exponential and Logarithmic Relationships (lecture) A. Laws of exponents B. Logarithmic expressions and properties C. Solving exponential equations using logarithms D. Solving logarithmic equations using exponents E. Real-world applications of exponential growth and decay IX. Graphing Functions (lecture) A. Graphing exponential functions B. Graphing logarithmic functions C. Intercepts and end behavior D. Interpreting graphs of functions X. Trigonometric Functions (lecture) A. Graphing sine and cosine functions B. Amplitude, period, and midline C. Transformations of trigonometric functions XI. Trigonometry of General Triangles (lecture) A. Law of Sines B. Law of Cosines C. Solving oblique triangles D. Applications of trigonometry in real-world problems XII. Sequences and Mathematical Patterns (lecture) A. Identifying patterns in sequences B. Writing rules to describe sequences C. Arithmetic and geometric sequences D. Applications of sequences and patterns
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:	2) Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	Scenario: An architect is designing a curved entryway for a new community center. The shape of the archway can be modeled by the polynomial function: $f(x) = -x^2 + 6x - 9$. Task 1: Operations The architect decides to add a decorative trim that follows a simpler path: $g(x) = 2x - 3$. Find the sum of the two functions $(f + g)(x)$. Show each step of your addition.

	Task 2: Finding the X-Intercepts Using the original function $f(x) = -x^2 + 6x - 9$: - Factor the polynomial to find the zeros (the points where the arch touches the ground). - Identify the x-intercepts on a graph. Does the arch touch the ground at one point or two? Task 3: Beyond Real Numbers If the arch design changed to $f(x) = x^2 + 25$, it would no longer touch the x-axis. Solve $x^2 + 25 = 0$ using complex numbers (i).
Critical Thinking Assignment 1:	Scenario: You are helping a small business plan its growth. In their first month, they gained 10 new customers. Every month after that, they aim to gain 5 more customers than they did the previous month. Task 1: Identify the Pattern List the number of new customers gained in each of the first 5 months. - Month 1: 10 - Month 2: 15 ... (Complete the list) Task 2: Find the Rule Is this an arithmetic or geometric sequence? Write a general rule (formula) to find the number of new customers in any month (n). <i>Hint:</i> Use $a_n = a_1 + (n-1)d$ Task 3: Predicting the Future Using your rule from Task 2, how many new customers will the business gain in Month 24? Show your calculation.
Critical Thinking Assignment 2:	Scenario: The Quality Control Test A local manufacturing company is testing a new "long-life" lightbulb. They claim that only 2% of bulbs are defective. You are tasked with analyzing a sample of 500 bulbs. Task 1: Probability Outcomes If the 2% claim is true, what is the expected number of defective bulbs in your sample? If you find 15 defective bulbs, does this result suggest the company's claim is inaccurate? Explain your reasoning. Task 2: Interpreting the Study The company provides a report based on an observational study of customers who bought the bulbs versus an experiment where bulbs were left on in a lab. - Which study type allows the company to claim that their bulb <i>causes</i> longer life? - Identify one potential "lurking variable" that could affect the lifespan of a bulb in a customer's home that wouldn't be present in a lab. Task 3: Statistical Justification Write a two-sentence conclusion justifying whether the company should continue using the current manufacturing process based on your sample findings.
Other Evaluation Methods:	Homework Problems, Objective Exam, Quizzes
If Other:	
Instructional Methods:	Demonstration, Discussion, Group Activities, Lecture
If other:	
Work Outside of Class:	Answer questions, Problem solving activity, Skill practice, Study
If Other:	
Up-To-Date Representative Texts:	Ron Larson and Laurie Boswell. <i>Big Ideas Math: Integrated Mathematics III</i> . Big Ideas Learning, 2016. (Disciplined Standard)
Alternative Texts:	

Required Supplementary Readings:	
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 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:	03/11/2026
Original Board Approval Date:	05/20/2026
Effective Term:	FA 2026