



El Camino College
COURSE OUTLINE OF RECORD – Official

Subject:	PASS
Course Number:	520
Descriptive Title:	Calculus Academy
Division:	Library and Learning Resources
Department:	Pathways to Academic Success
Course Disciplines:	Mathematical Sciences
Catalog Description:	This course's content is pre-collegiate and covers manipulations of functions, operations of polynomials, and the properties of logarithms and exponentials. Focus will also include trigonometry functions, complex expressions, and analytic geometry.
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) Solve quadratic equation.</p> <p>2) Compute the area of simple shapes and volume of simple 3D shapes.</p> <p>3) Solve problems, including problems involving complex equations, linear equations, operations on functions, and basic trigonometry functions.</p>
<p>Course Objectives:</p>	<p>1) Evaluate functions from graphs, discrete, and expression with function notation.</p> <p>2) Solve application questions with exponentials and logarithmics.</p> <p>3) Solve application problems using basic trigonometry functions.</p>
<p>Major Topics:</p>	<p>I) Algebra-Manipulation Expressions (12 hours, Lecture)</p> <p>A) Manipulate and Operations of Polynomials</p> <ul style="list-style-type: none"> • Addition and Subtraction • Multiplication and Division • Factoring • Solving simple Linear equations • Quadratic equations <ul style="list-style-type: none"> • Completing the square • Quadratic formula • Properties of Exponents <ul style="list-style-type: none"> • Reciprocals • Roots • Logarithmic and Logarithmic's properties. • Simplifying Complex Expressions <p>II) OPERATIONS & APPLICATIONS (2 hours, Lab)</p> <ul style="list-style-type: none"> • Operations of polynomials • Symplifying complex expressions <p>III) Functions (10 hours, Lecture)</p> <p>A) Represent a function and its graph.</p> <ul style="list-style-type: none"> • Functions <ul style="list-style-type: none"> • Evaluating functions • Evaluating functions from graphs • Evaluating discrete functions • Evaluating expression with function notation • Know the graphs of various elementary functions. <ul style="list-style-type: none"> • Linear Function

- Quadratic functions
- Graph n^{th} degrees polynomials.
- Exponentials
- Logarithms
- Manipulations of functions
 - Addition
 - Subtraction
 - Multiplication
 - Division
- function terminology.
 - Domain
 - Range
 - Odd and even functions
 - Periodic
 - Zeros
 - Intercepts

IV) OPERATIONS & APPLICATIONS (2 hours, Lab)

- Evaluation of functions
- Graph of functions

V) Geometry (10 hours, Lecture)

- Compute the area of simple shapes.
 - Rectangles
 - Triangles
 - Trapezoids
 - Circle
- Compute the volume of simple 3d shapes.
 - Cube
 - Prism
 - Sphere
- Analytic geometry
- Cross Section of 3D shape
 - Cube
 - Rectangular Pyramid
- Reasoning and graph of
 - Points
 - Lines
 - Shapes in coordinate plane
 - Equation for parallel and perpendicular lines
 - Equation of a circle

VI) OPERATIONS & APPLICATIONS (2 hours, Lab)

- Area of simple shapes
- Volume of 3D shapes

VII) Trigonometry (10 hours, Lecture)

	<ul style="list-style-type: none"> • Basic trigonometry functions: <ul style="list-style-type: none"> • Unit circle • Trigonometry functions • Trigonometry Ratios • Right triangle • • Value of functions <ul style="list-style-type: none"> • $0, \pi/6, \pi/4, \pi/3, \pi/2$, etc. • Graph of Trigonometry functions <ul style="list-style-type: none"> • Sin(x) • Cos (x) • Tan (x)
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:	A woman takes 20 minutes to row 12 mile upstream which is a third more than the time he takes on the way down the stream. What is his speed in still water?
Critical Thinking Assignment 1:	The surface area S of a sphere is given by the formula $S=4(\pi)r^2$, where r is the radius of the sphere. An almanac lists the surface area of the Earth as 196,938,800 square miles. Assuming the Earth to be spherical, what is its radius to the nearest miles?
Critical Thinking Assignment 2:	Sky dive: Before the parachute opens, a skydiver's velocity in meters per second is modeled by the function $f(t) = 50(1-e^{-0.2t})$ where $f(t)$ is the velocity at time t . Find the velocity after 20 seconds of free fall.
Other Evaluation Methods:	Class Performance, Completion, Homework Problems, Quizzes
If Other:	
Instructional Methods:	Demonstration, Discussion, Group Activities, 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
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Requisite Skill and Matching skill(s): Bold the requisite skill(s) if applicable	N/A
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Enrollment Limitations and Category:	N/A
Enrollment Limitations Impact:	N/A
Course Created by:	Malinni Roeun
Date:	3/21/2024
Original Board Approval Date:	11/18/2024
Effective Term:	SP 2025