

# Glendale College

## Course Outline of Record Report

Course ID 003254  
Cyclical Review - May 2025

### MATH110 : Precalculus and Trigonometry

#### General Information

Author:	<ul style="list-style-type: none"> <li>Suzanne Palermo</li> </ul>
Attachments:	DE_Addendum_MATH_110_COR_9:8:21_Code_9:28:21.pdf
Course Code (CB01) :	MATH110
Course Title (CB02) :	Precalculus and Trigonometry
Department:	MATH
Proposal Start:	Spring 2026
TOP Code (CB03) :	(1701.00) Mathematics, General
CIP Code:	(27.0101) Mathematics, General.
SAM Code (CB09) :	E - Non-Occupational
Distance Education Approved:	Yes
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000609167
Curriculum Committee Approval Date:	05/28/2025
Board of Trustees Approval Date:	07/08/2025
Last Cyclical Review Date:	05/28/2025
Course Description and Course Note:	<p>MATH 110 is an accelerated precalculus course in algebra and trigonometry that encourages students to connect mathematical theories to the real world. Students explore a wide range of mathematical concepts, including polynomial, absolute value, radical, rational, exponential, logarithmic, and trigonometric functions and their graphs, inverses, zeroes, and diverse applications. Topics also cover inequalities, trigonometric identities, conic sections, polar equations, parametric equations, and systems of equations. Resources and support are available to accommodate different learning styles. Note: The maximum number of units given for MATH 110 AND 100, 100+, 101E, 110A, 110B, or 111 is 6 units.</p>
Justification:	Mandatory Revision
Academic Career:	<ul style="list-style-type: none"> <li>Credit</li> </ul>
Mode of Delivery:	<ul style="list-style-type: none"> <li>In-Person</li> <li>Remote</li> <li>Hybrid</li> <li>Proctored Online</li> </ul>
Author:	No value
Course Family:	No value

#### Academic Senate Discipline

Primary Discipline:	<ul style="list-style-type: none"> <li>Mathematics</li> </ul>
Alternate Discipline:	No value

Alternate Discipline: No value

### Last Course Offering

**When was this course last offered (term and year)?**

Spring 2025

### Course Development

**Basic Skill Status (CB08)**

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

**Course Special Class Status (CB13)**

Course is not a special class.

**Pre-Collegiate Level (CB21)**

Not applicable.

**Grading Basis**

- Grade with Pass / No-Pass Option

**Course Support Course Status (CB26)**

Course is not a support course

### General Education and C-ID

**General Education Status (CB25)**

GE Status (CSU) B4, (UC) 2

**Transferability**

Transferable to both UC and CSU

**Transferability Status**

Approved

**Cal-GETC**

Area 2: Mathematical Concepts and Quantitative Reasoning

**Area**

Mathematical Concepts and Quantitative Reasoning

**Status**

Approved

**Approval Date**

09/02/2025

**Comparable Course**

No Comparable Course defined.

**GCC General Education Requirements**

Area 2: Mathematical Concepts and Quantitative Reasoning

**Area**

Mathematical Concepts and Quantitative Reasoning

**Status**

Approved

**Approval Date**

09/02/2025

**Comparable Course**

No Comparable Course defined.

### Units and Hours

#### Summary

**Minimum Credit Units (CB07)** 6

**Maximum Credit Units (CB06)** 6

**Total Course In-Class (Contact Hours)** 108

**Total Course Out-of-Class Hours** 216

**Total Student Learning Hours** 324

**Credit / Non-Credit Options**

**Course Type (CB04)**

Credit - Degree Applicable

**Noncredit Course Category (CB22)**

Credit Course.

**Noncredit Special Characteristics**

No Value

**Course Classification Code (CB11)**

Credit Course.

Variable Credit Course

**Funding Agency Category (CB23)**

Not Applicable.

Cooperative Work Experience Education Status (CB10)

**Weekly Student Hours**

	In Class	Out of Class
Lecture Hours	6	12
Laboratory Hours	0	0
Studio Hours	0	0

**Course Student Hours**

<b>Course Duration (Weeks)</b>	18
<b>Hours per unit divisor</b>	54
<b>Course In-Class (Contact) Hours</b>	
Lecture	108
Laboratory	0
Studio	0
<b>Total</b>	108
<b>Course Out-of-Class Hours</b>	
Lecture	216
Laboratory	0
Studio	0
<b>Total</b>	216

**Time Commitment Notes for Students**

No value

**Units and Hours - Weekly Specialty Hours**

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

## Prerequisites, Corequisites, Recommended Corequisites, and Recommended Preparation

### Prerequisite

Placement is based on academic background or satisfactory completion of Intermediate Algebra or the equivalent.

## Entry Standards

### Entry Standards

### Description

No value

No value

## Course Limitations

### Cross Listed or Equivalent Course

### Description

MATH 110B

No Value

## Specifications

### Methods of Instruction

Methods of Instruction

Lecture

Methods of Instruction

Discussion

Methods of Instruction

Multimedia

Methods of Instruction

Collaborative Learning

Methods of Instruction

Demonstrations

### Out of Class Assignments

- Homework (e.g. problem sets related to course content)
- Group assignments and projects (e.g. find a real-life application and prepare a presentation)
- Online graphing software or computer assignments

**Methods of Evaluation****Rationale**

Exam/Quiz/Test

Quizzes

Exam/Quiz/Test

Four or more assessments are required

Exam/Quiz/Test

A comprehensive final assessment is required

**Textbook Rationale**

No Value

**Textbooks**

Author	Title	Publisher	Date	ISBN
Stewart, James	Algebra and Trigonometry	Cengage Learning	2024	9780357753644

**Other Instructional Materials (i.e. OER, handouts)**

No Value

**Learning Outcomes****Course Objectives**

Graph functions and relations in rectangular coordinates and polar coordinates.

Synthesize results from the graphs and/or equations of functions and relations.

Apply transformations to the graphs of functions and relations.

Recognize the relationship between functions and their inverses graphically and algebraically.

Solve and apply equations including rational, linear, polynomial, exponential, absolute value, radical and logarithmic, and solve linear, nonlinear and absolute value inequalities.

Solve linear and non-linear systems of equations and inequalities.

Apply functions to model real world applications.

Prove trigonometric identities.

Identify special triangles and their related angle and side measures.

Evaluate a trigonometric function at an angle whose measure is given in degrees and radians.

Manipulate and simplify trigonometric expressions.

Solve trigonometric equations, triangles and applications.

Graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs.

Evaluate and graph inverse trigonometric functions.

Convert between polar and rectangular coordinates.

Calculate powers and roots of complex numbers using De Moivre's Theorem.

Represent a vector (a quantity with magnitude and direction) in the form  $\langle a,b \rangle$  and  $ai+bj$ .

**SLOs**

**Solve and graph algebraic equations, inequalities, and systems of equations.**

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Use quantitative and/or analytical mathematical skills to solve problems and to interpret, evaluate, and process information and data to draw logical conclusions and support claims.

<i>ILOs</i> General Education	apply techniques of analysis and critical thinking to critique real world and theoretical topics and issues
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**Use trigonometric identities as well as solve and graph trigonometric equations that may involve vectors, complex numbers, and/or polar coordinates.**

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Use quantitative and/or analytical mathematical skills to solve problems and to interpret, evaluate, and process information and data to draw logical conclusions and support claims.
<i>ILOs</i> General Education	apply techniques of analysis and critical thinking to critique real world and theoretical topics and issues

## Course Content

### Lecture Content

#### Basic Concepts (3 hours)

- Real numbers
- Exponents and radicals
- Algebraic expressions
- Rational expressions

#### Equations and Inequalities (6 hours)

- First degree equations
- Quadratic equations
- Complex numbers
- Other types of equations (rational, radical, absolute value)
- Linear and absolute value inequalities
- Quadratic and other non-linear inequalities
- Applications

#### Functions and Their Graphs (9 hours)

- Cartesian Coordinate System
- Function (linear, polynomial, rational, radical, absolute value) definition, evaluation, domain and range
- Graphs of functions (linear, quadratic, rational, radical, absolute value) including vertices, asymptotic behavior, and intercepts
- Transformations of functions (linear, quadratic, rational, radical, absolute value)
- Quadratic functions
- Algebra of functions
- One-to-one functions and inverses of functions

#### Polynomial and Rational Functions (9 hours)

- The Remainder Theorem and the Factor Theorem
- Synthetic division
- The Fundamental Theorem of Algebra
- Rational roots
- Graphing polynomial functions
- Rational functions

#### Exponential and Logarithmic Functions (7 hours)

- Exponential functions
- Logarithmic functions
- Transformations of exponential and logarithmic functions
- Properties of logarithms
- Exponential and logarithmic equations
- Common and natural logarithms
- Applications

#### Systems of Equations and Inequalities (5 hours)

- Systems of linear equations and inequalities in 2 variables
- Systems of linear equations (including Gaussian Elimination) in more than 2 variables
- Non-linear systems of equations in 2 variables

#### Other Topics (6 hours)

- Conic sections – analytic geometry

- Partial fraction decomposition
- Sigma notation
- Sequences and series

#### **Trigonometric Functions (8 hours)**

- Definition of the six trigonometric functions of a right triangle
- Definition of the six trigonometric functions of any angle on the rectangular coordinate system
- Inverse trigonometric functions
- Right triangle trigonometry and applications

#### **Radian Measure and Graphing (12 hours)**

- Radian measure
- Linear and angular velocity
- The six trigonometric functions on the unit circle
- Graphs of functions involving  $\sin x$ ,  $\cos x$ ,  $\tan x$ ,  $\cot x$ ,  $\csc x$ , and  $\sec x$
- Graphs of the trigonometric functions: period, amplitude, phase shift, and asymptotes
- Other graphs involving trigonometric functions

#### **Trigonometric Identities (14 hours)**

- Simplifying trigonometric expressions
- Identities involving sums and differences of two angles
- Double-angle identities
- Half-angle identities
- Sum-to-product and product-to-sum identities
- Proofs of trigonometric identities

#### **Trigonometric Equations and Inverse Trigonometric Functions (10 hours)**

- Solving trigonometric equations
- Inverse trigonometric functions
- Graphs of inverse trigonometric functions

#### **Oblique Triangles (4 hours)**

- The Law of Cosines
- The Law of Sines
- Areas of triangles

#### **Vectors in Two Dimensions (5 hours)**

- The algebra of vectors
- The dot product
- Applications

#### **Polar Coordinates (10 hours)**

- Polar coordinates
- Polar graphs
- Parametric equations

**Total Hours: 108**

### **Additional Information**

#### **Repeatability**

Not Repeatable

#### **Justification (if repeatable was chosen above)**

No Value

#### **Is it possible this course will have a material fee?**

No

I have contacted my library liaison (<https://campusguides.glendale.edu/faculty/liaisons>):

No

What term(s) will this course be offered?

Summer

Will any additional resources be needed for this course? (Click all that apply)

- No

If additional resources are needed, add a brief description and cost in the box provided.

No Value