

MATH-108: TRIGONOMETRY

Effective Term

Fall 2026

CC Approval

10/03/2025

AS Approval

10/09/2025

BOT Approval

10/16/2025

SECTION A - Course Data Elements

Send Workflow to Initiator

No

CB04 Credit Status

Credit - Degree Applicable

Discipline

Minimum Qualifications	And/Or
Mathematics (Master's Degree)	

Subject Code

MATH - Mathematics

Course Number

108

Department

Mathematics

Division

Mathematics (MATH)

Full Course Title

Trigonometry

Short Title

Trigonometry

CB03 TOP Code

1701.00 - Mathematics, General

CB08 Basic Skills Status

NBS - Not Basic Skills

CB09 SAM Code

E - Non-Occupational

Rationale

Updating course as part of regular curriculum review cycle.

SECTION B - Course Description

Catalog Course Description

This course offers a solid foundation in trigonometry essential for studying Calculus. Topics covered include trigonometric functions and their inverses, graphing these functions, identities and proofs related to trigonometric expressions, trigonometric equations, solving right triangles, applying the Law of Cosines and Law of Sines to solve triangles, polar coordinates, and an introduction to vectors.

SECTION C - Conditions on Enrollment

Open Entry/Open Exit

No

Repeatability

Not Repeatable

Grading Options

Letter Grade Only

Allow Audit

Yes

Requisites

Prerequisite(s)

Completion of MATH-106 with a minimum grade of C.

Requisite Justification

Requisite Description

Course in a Sequence

Subject

MATH

Course

106

Level of Scrutiny

Content Review

Upon entering this course, students should be able to:

1. Graph and analyze functions.
2. Apply College Algebra skills to simplify expressions and solve equations.
3. Graph and analyze functions on a graphical calculator.
4. Solve application problems involving algebraic functions.

SECTION D - Course Standards

Is this course variable unit?

No

Units

3.00

Lecture Hours

54.00

Outside of Class Hours

108

Total Contact Hours

54

Total Student Hours

162

Distance Education Approval

Is this course offered through Distance Education?

Yes

Online Delivery Methods

DE Modalities	Permanent or Emergency Only?
Entirely Online	Emergency Only
Hybrid	Permanent
Online with Proctored Exams	Permanent

SECTION E - Course Content

Student Learning Outcomes

Upon satisfactory completion of the course, students will be able to:	
1.	Graph trigonometric and polar equations.
2.	Solve trigonometric equations and triangles.
3.	Establish trigonometric identities.
4.	Write mathematical proofs in trigonometry.

Course Objectives

Upon satisfactory completion of the course, students will be able to:	
1.	Identify special triangles and their related angle and side measures.
2.	Evaluate the trigonometric function of an angle in degree and radian measure.
3.	Manipulate and simplify a trigonometric expression.
4.	Solve trigonometric equations, triangles, and applications.
5.	Graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs.
6.	Evaluate and graph inverse trigonometric functions.
7.	Prove trigonometric identities.
8.	Convert between polar and rectangular coordinates and equations.
9.	Graph polar equations.
10.	Calculate powers and roots of complex numbers using DeMoivre's Theorem.
11.	Represent a vector (a quantity with magnitude and direction) in the form $a+bi$.

Course Content

1. Rectangular coordinates, angles and circular/radian measure.
2. Definitions of the six trigonometric functions according to the right triangle, the unit circle, and the rectangular coordinate system.
3. Applications of the right triangle.
4. Simplification of trigonometric expressions.
5. Proofs of trigonometric identities.
6. Graphs of trigonometric functions: period, amplitude, phase shift, asymptotes.
7. Inverse trigonometric functions and their graphs.
8. Trigonometric equations.
9. Solving Triangles: Law of Sines and Law of Cosines.
10. Polar coordinates and equations.
11. DeMoivre's Theorem and applications.
12. Introduction to vectors.

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Activity	Students use an online graphing tool like Desmos to explore and visualize trigonometric identities.

Discussion	Students discuss questions in class “such as how does visualizing trigonometric functions on the unit circle help you understand the relationship between sine, cosine, and the Pythagorean identity?”
Lecture	Instructor lectures on course content such as introducing right triangle trigonometry.

Online Adaptation

Types	Examples of learning activities
Activity	Students use an online graphing tool like Desmos to explore and visualize trigonometric identities.
Discussion	Students respond to Canvas discuss questions such as “how does visualizing trigonometric functions on the unit circle help you understand the relationship between sine, cosine, and the Pythagorean identity?”
Lecture	Instructor lectures on course content such as introducing right triangle trigonometry.

Instructor-Initiated Online Contact Types

Announcements/Bulletin Boards
 Chat Rooms
 Discussion Boards
 E-mail Communication
 Telephone Conversations
 Video or Teleconferencing

Student-Initiated Online Contact Types

Chat Rooms
 Discussions
 Group Work

Course design is accessible

Yes

Methods of Evaluation

Methods of Evaluation

Types	Examples of classroom assessments
Exams/Tests	For example, an exam on applications of trigonometric functions might include a selection of computational and application problems involving right-triangle trigonometry, The Law of Sines and The Law of Cosines. An exam on graphing trigonometric functions might include a selection of functions to graph involving the six trigonometric functions and their transformations.
Quizzes	For example, a quiz on angle measurements might include a selection of problems involving the conversion between radian and degree measurement. A quiz on the unit circle might ask the student to identify the coordinates of points on the unit circle corresponding to the common angles.
Oral Presentations	Students may be asked to present problems, solutions, graphs, or proofs of identities to the class.
Homework	A typical homework assignment might include a selection of problems from the corresponding section of the book, or a worksheet or project to be completed outside of class.

Other

The Mathematics Department maintains a commitment to diverse teaching methods in courses emphasizing vital quantitative skills and qualitative reasoning ability. To that end, it is expected that sufficient formative assessments will be given to students that in frequency, length and rigor adequately assess both quantitative skills and qualitative reasoning.

Sample assessment questions:

You are walking due east (to the right) on campus carrying your books in a rolling backpack with a force of 25 N upward and to the right. The angle between the handle of the backpack and the horizontal ground is 50° . Write the force vector F in terms of i and j rounded to one decimal place.

You are standing on the ground and see a plane at an angle of elevation of 39.1° . At the same time, your friend who is 2500 feet away from you on the same line of sight has an angle of elevation to the plane of 29° . How high is the plane? Round to the nearest foot.

Assignments

Reading Assignments

Reading assignments will be given from the text or other materials such as:

1. Read the section on the Properties of the Trigonometric Functions.
2. Read the section on The Law of Sines.

Writing Assignments

Writing assignments will involve students solving problems from the text or other materials such as:

1. Find the exact value of: $\sin 90 + \tan 45$
2. Solve the equation on the interval zero to 2π : $\cos(2x) = \cos x$

SECTION F - Textbooks and Instructional Materials

Material Type

Open Educational Resource (OER)

Author

Jay Abramson

Title

Precalculus

Edition/Version

2nd

Publisher

Openstax

Year

2021

ISBN

978-1-938168-34-5

SECTION G - Diversity, Equity and Inclusivity

How does your course and/or course outline of record reflect strategies for accommodating and engaging diverse student populations, advancing equitable outcomes, and fostering inclusion for all students?

This course reflects strategies for accommodating and engaging diverse student populations by using open educational resources (OER), which ensure all students have free and equitable access to high-quality learning materials.

Course Codes (Admin Only)

CB00 State ID

CCC000561216

CB10 Cooperative Work Experience Status

N - Is Not Part of a Cooperative Work Experience Education Program

CB11 Course Classification Status

Y - Credit Course

CB13 Special Class Status

N - The Course is Not an Approved Special Class

CB23 Funding Agency Category

Y - Not Applicable (Funding Not Used)

CB24 Program Course Status

Program Applicable

Allow Pass/No Pass

No

Only Pass/No Pass

No