MATH-110: COLLEGE MATHEMATICS

Effective Term
Fall 2025

CC Approval
04/19/2024

AS Approval
10/24/2024

BOT Approval
11/21/2024

COCI Approval
05/02/2025

SECTION A - Course Data Elements

CB04 Credit Status
Credit - Degree Applicable

Discipline

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

Subject Code
MATH - Mathematics
Course Number
110

Department
Mathematics (MATH)

Division
Mathematics (MATH)

Full Course Title
College Mathematics

Short Title
College Mathematics

CB03 TOP Code
1701.00 - Mathematics, General

CB08 Basic Skills Status
NBS - Not Basic Skills

CB09 SAM Code
E - Non-Occupational

Rationale
This precalculus class includes components of college algebra and trigonometry to expose students to college-level math topics. The course complies with AB 1705 and the Chancellor's Office directives.

SECTION B - Course Description

Catalog Course Description
This course covers polynomial, absolute value, radical, rational, exponential, logarithmic, and trigonometric equations, functions and their graphs; analytic geometry and polar coordinates.

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 Intermediate Algebra level content or equivalent or appropriate placement.

Requisite Justification
Requisite Description
Non-course Requisite

Level of Scrutiny
Required by 4-Year Institution

Explanation
Required on C-ID for Math 155.

SECTION D - Course Standards

Is this course variable unit?
No

Units
4.00

Lecture Hours
54.00

Activity Hours
36.00

Outside of Class Hours
126

Total Contact Hours
90

Total Student Hours
216

Distance Education Approval

Is this course offered through Distance Education?
Yes

Online Delivery Methods

DE Modalities	Permanent or Emergency Only?
Entirely Online	Permanent
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 functions, such as polynomial, rational, exponential, logarithmic and trigonometric.
2.	Solve applications problems involving polynomial, rational, radical, exponential, logarithmic and/or trigonometric equations.
3.	Simplify expressions including polynomial, rational, exponential, logarithmic and/or trigonometric terms.
4.	Prove trigonometric identities.

Course Objectives

	Upon satisfactory completion of the course, students will be able to:
1.	Graph functions and relations in rectangular coordinates and polar coordinates.
2.	Synthesize results from the graphs and/or equations of functions and relations.
3.	Apply transformations to the graphs of functions and relations.
4.	Recognize the relationship between functions and their inverses graphically and algebraically.
5.	Solve and apply equations including rational, linear, polynomial, exponential, absolute value, radical, and logarithmic, and solve linear, nonlinear, and absolute value inequalities.
6.	Solve systems of equations and inequalities.
7.	Apply functions to model real world applications.
8.	Identify special triangles and their related angle and side measures.
9.	Evaluate the trigonometric function of an angle given in degree and radian measure.
10.	Manipulate and simplify a trigonometric expression.
11.	Solve trigonometric equations, triangles, and applications.
12.	Graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs.
13.	Prove trigonometric identities.

Course Content
1. Functions
    a. linear
    b. polynomial
    c. rational
    d. radical
    e. exponential
    f. absolute value
    g. logarithmic
    h. trigonometric
    i. piecewise
    j. definitions
    k. evaluation
    l. domain and range
2. Inverses of functions
    a. solving
    b. proving
3. Algebra of functions
    a. operations
    b. composition
4. Graphs of functions

  a. asymptotic behavior
  b. intercepts
  c. vertices
  d. extrema
5. Transformations of functions
  a. quadratic
  b. absolute value
  c. radical, rational
  d. logarithmic
  e. exponential
6. Solving Equations
  a. rational
  b. linear
  c. radical
  d. polynomial
  e. exponential
  f. trigonometric
  g. logarithmic
  h. absolute value
7. Solve Inequalities
  a. linear
  b. nonlinear
  c. absolute value
8. Solving Systems
  a. equations
  b. inequalities
9. Characterization of real and complex zeros of polynomials
10. Trig functions
  a. unit circle
  b. right triangle
11. Trigonometric and inverse trigonometric identities and formulas
12. Graphing trigonometric functions
  a. period
  b. amplitude
  c. phase shift
  d. inverse trigonometric function
13. Polar coordinates

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Lecture	In class lecture
Discussion	Discussion of class topics
Other	Practice problems

Instructor-Initiated Online Contact Types

Announcements/Bulletin Boards
Discussion Boards
E-mail Communication
Video or Teleconferencing

Student-Initiated Online Contact Types

Discussions
Group Work

Course design is accessible

Yes

Methods of Evaluation

Methods of Evaluation

Types	Examples of classroom assessments
Exams/Tests	Traditional exams including a final exam. Exams could include solving linear and nonlinear equations. Exams could include finding the equation that represents a given graph. Exams could include proving trigonometric identities
Quizzes	Quizzes on class material
Projects	Individual or group projects
Homework	Homework problems from textbook
Other	Additional assessment information: 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.

Assignments

Reading Assignments

Read sections from the textbook, for example:

1. Read section on inverses of functions.
2. Read section on right triangle trigonometry.

Writing Assignments

Daily homework exercises from the text, for example:

1. Solve the equation $-4x^3 + 16x^2 + 25x - 100 = 0$.
2. Prove the identity $\cos^4(x) - \sin^4(x) = \cos(2x)$.

Other Assignments

Other assignments such as research into applications or group projects assigned at instructors' discretion.

SECTION F - Textbooks and Instructional Materials

Material Type

Open Educational Resource (OER)

Author

Jay Abramson

Title

Precalculus (Digital)

Edition/Version

Second

Publisher

OpenStax

Year

2021

ISBN #

ISBN-13: 978-1-951693-39-8

Course Codes (Admin Only)

ASSIST Update
Yes

CB00 State ID
CCC000652262

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
Yes

Only Pass/No Pass
No