BROWARD COLLEGE
www.broward.edu

Course Outline

Course Title: Trigonometry
Common Course Title: MAC1114
Effective Term: Fall 2021 (Aug 9, 2021)
Credit Hours: 3 Units

Next Review : Aug 8, 2026
Contact Hour Breakdown: *(Per 16 week Term)*

Total: 48	
Lecture:	Lab:
Clinic:	Other:

Requirements

Pre-requisite with minimum grade required
MAC1105 (C) **OR** MAC1105C (C)

Course Description:

This course, in conjunction with MAC1140, is designed to prepare the student for the study of calculus. Topics include a functional approach to trigonometry, trigonometric equations, trigonometric identities, solving triangles, vectors, polar coordinates and equations, and parametric equations. A graphing calculator may be required. Recommendation of the Mathematics Department or at least a grade of C in the prerequisite course is required.

Course Outline

Alignment of General Education Competencies with General Outcomes of this Course (for general education assessment purposes)

1. Critical Thinking
   - 6.0

2. Effective Communication
   - 4.0

3. Ethical Reasoning

4. Global Awareness

5. Information Literacy

6. Mathematical and Scientific Reasoning
   - 1.0

UNITS

Unit 1: Trigonometric Functions and Their Graphs

General Outcome
1.0 Define, apply, and graph the trigonometric functions.

Specific Learning Outcomes
1.1 Solve problems involving degree and radian measure of angles as they relate to circular models in the physical world.
1.2 Define the sine, cosine, tangent, cotangent, secant, and cosecant functions of angles and of real numbers.
1.3 Know and apply the fundamental identities relating the six basic trigonometric functions.
1.4 Sketch the graphs of the six basic trigonometric functions and specify the intervals over which they increase or decrease.
1.5 Identify and use the domain, range, amplitude, period and phase shift to graph trigonometric functions.

Unit 2: Inverse Trigonometric Functions and Their Graphs

General Outcome
2.0 Define, apply, and graph the inverse trigonometric functions.

Specific Learning Outcomes
2.1 Define and graph the inverse trigonometric functions.
2.2 Apply the definitions to evaluate inverse trigonometric functions.

Unit 3: Trigonometric Identities and Equations

General Outcome
3.0 Verify trigonometric identities and solve trigonometric equations.

Specific Learning Outcomes
3.1 Write the proofs of trigonometric identities using fundamental identities, addition-subtraction formulas, co-function formulas, half-angle formulas, double-angle formulas, and power-reducing formulas.
3.2 Solve trigonometric equations, both with and without a specified interval.

Unit 4: Solutions of Triangles

General Outcome
4.0 Solve right and oblique triangles.

Specific Learning Outcomes
4.1 Solve a right triangle using the definitions of sine, cosine, tangent, cosecant, secant, and cotangent.
4.2 Solve an oblique triangle using the Law of Sines and/or the Law of Cosines.
4.3 Use right and/or oblique triangles to read, interpret, and solve problems involving real-world applications such as navigation, angles of elevation and depression, temperature, air flow, and tides.

Unit 5: Polar Coordinates, Equations, and Their Graphs

General Outcome
5.0 Manipulate and graph polar coordinates and equations.

Specific Learning Outcomes
5.1 Plot points in polar coordinates on a polar plane.
5.2 Convert ordered pairs from rectangular to polar coordinates and vice-versa.
5.3 Convert equationsfrom rectangular form to polar form and vice-versa.
5.4 Plot graphs of simple polar equations.

Unit 6: Vectors

General Outcome
6.0 Manipulate 2-dimensional vectors and use vectors to solve applied problems.

Specific Learning Outcomes
6.1 Interpret the various forms of vectors both geometrically and analytically as used in physics.
6.2 Perform operations of addition, subtraction, and scalar multiplication of vectors both geometrically and analytically.
6.3 Calculate the dot product of vectors, the scalar projection of a vector onto another vector, and the cosine of the angle between vectors.
6.4 Express vectors in trigonometric form.
6.5 Read, interpret, and solve applied problems using vectors as used in physics.

Unit 7: Parametric Equations and Their Graphs

General Outcome
7.0 Manipulate and graph parametric equations.

Specific Learning Outcomes
7.1 Plot and show the orientation of graphs represented by parametric equations.
7.2 Eliminate the parameter in a set of parametric equations.