

Florida Department of Education

COURSE DESCRIPTION - GRADES 9-12, ADULT

Subject Area: Mathematics
Course Number: 1211300
Course Title: Trigonometry
Credit: .5

Will meet graduation requirement for Mathematics

Basic Assumptions for Mathematics Education:

- All students have access to calculators and computers.
- Classroom activities are student-centered, emphasizing concrete experiences and active/experiential learning.
- All courses have increased emphasis on problem solving, estimation, and real-world applications.
- Evaluation includes alternative methods of assessment.
- All strands addressed in the Sunshine State Standards are developed across the PreK-12 curriculum.

- A. Major Concepts/Content.** The purpose of this course is to study circular and trigonometric functions and their applications.

The content will include, but not be limited to, the following:

- circular and trigonometric functions and their inverses
- trigonometric identities
- graphs of trigonometric functions and their inverses
- trigonometric equations
- solutions of right and oblique triangles
- trigonometric form of complex numbers

This course shall integrate the Goal 3 Student Performance Standards of the Florida System of School Improvement and Accountability as appropriate to the subject matter.

- B. Special Note.** Students earning credit in Pre-Calculus may not earn credit in both Trigonometry and Analytic Geometry.

- C. **Course Requirements.** These requirements include the benchmarks from the Sunshine State Standards that are most relevant to this course. Some requirements in this advanced mathematics course are not addressed in the Sunshine State Standards, and some of the cited benchmarks are prerequisite to the course requirement.

After successfully completing this course, the student will:

1. **Demonstrate an understanding of the connection between trigonometric and circular functions and their inverses.**
 - MA.B.1.4.1 use concrete and graphic models to derive formulas for finding perimeter, area, surface area, circumference, and volume of two- and three-dimensional shapes, including rectangular solids, cylinders, cones, and pyramids.
 - MA.B.1.4.2 use concrete and graphic models to derive formulas for finding rate, distance, time, angle measures, and arc lengths.
 - MA.D.1.4.1 describe, analyze, and generalize relationships, patterns, and functions using words, symbols, variables, tables, and graphs.

2. **Demonstrate an understanding of trigonometric identities.**
 - MA.A.3.4.1 understand and explain the effects of addition, subtraction, multiplication, and division on real numbers, including square roots, exponents, and appropriate inverse relationships.
 - MA.A.3.4.2 select and justify alternative strategies, such as using properties of numbers, including inverse, identity, distributive, associative, and transitive, that allow operational shortcuts for computational procedures in real-world or mathematical problems.

3. **Apply general graphing techniques to trigonometric functions and their inverses.**
 - MA.B.1.4.1 use concrete and graphic models to derive formulas for finding perimeter, area, surface area, circumference, and volume of two- and three-dimensional shapes, including rectangular solids, cylinders, cones, and pyramids.
 - MA.B.1.4.2 use concrete and graphic models to derive formulas for finding rate, distance, time, angle measures, and arc lengths.

- MA.C.2.4.1 understand geometric concepts such as perpendicularity, parallelism, tangency, congruency, similarity, reflections, symmetry, and transformations including flips, slides, turns, enlargements, rotations, and fractals.
- MA.D.1.4.2 determine the impact when changing parameters of given functions.

4. Solve a variety of trigonometric equations.

- MA.A.4.4.1 use estimation strategies in complex situations to predict results and to check the reasonableness of results.

5. Apply trigonometry to problem-solving situations involving triangles.

- MA.A.4.4.1 use estimation strategies in complex situations to predict results and to check the reasonableness of results.
- MA.A.5.4.1 apply special number relationships such as sequences and series to real-world problems.
- MA.B.1.4.3 relate the concepts of measurement to similarity and proportionality in real-world situations.
- MA.B.2.4.1 select and use direct (measured) and indirect (not measured) methods of measurement as appropriate.
- MA.B.3.4.1 solve real-world and mathematical problems involving estimates of measurements, including length, time, weight/mass, temperature, money, perimeter, area, and volume and estimate the effects of measurement errors on calculations.
- MA.C.3.4.1 represent and apply geometric properties and relationships to solve real-world and mathematical problems including ratio, proportion, and properties of right triangle trigonometry.

6. Demonstrate understanding of the connection between trigonometric functions, polar coordinates, and complex numbers.

- MA.A.1.4.1 associate verbal names, written word names, and standard numerals with integers, rational numbers, irrational numbers, real numbers, and complex numbers.
- MA.A.1.4.3 understand concrete and symbolic representations of real and complex numbers in real-world situations.
- MA.A.2.4.3 understand the structure of the complex number system.