South Central College

MATH 1050 Mathematics for Technical Careers

Course Outcome Summary

Course Information

Description This course develops a number of mathematical tools required of various technical fields. It covers certain applied aspects of algebra, trigonometry and geometry. More specifically, you will learn how to solve linear and quadratic equations and systems of linear equations, evaluate and use the six trigonometric functions in computing triangle results, and apply geometric concepts to the measurement of both two dimensional and three dimensional objects.

Total Credits 3

Total Hours 48

Types of Instruction

Instruction Type	Credits/Hours
Classroom Presentation	

Pre/Corequisites

A score of at least 56 on the Arithmetic portion of the Accuplacer test.

Institutional Core Competencies

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. Express algebraic concepts accurately in symbolic form

Learning Objectives

Identify the eleven fundamental properties of real number operations
Contrast exact solutions with calculator solutions
Express numbers using scientific notation
Evaluate expressions containing exponents and radicals

2. Manipulate algebraic expressions according to the properties of real numbers

Learning Objectives

Combine algebraic expressions using the four fundamental operators
Solve linear equations

Model real-world problems with algebraic equations

3. Visualize key geometric figures and relationships

Learning Objectives

Express linear relationships geometrically
Express equivalencies (if any) between pairs of angles

4. Compute geometric quantities

Learning Objectives

Calculate area and perimeter of triangles
Calculate area and perimeter of quadrilaterals
Calculate the circumference of a circle and the area bounded by it
Measure the area bounded by irregular figures
Compute the volume of certain solid geometric figures

5. Define the function concept clearly and accurately

Learning Objectives

Express the functional relationship of two sets of data
Contrast relations with functions

6. Visualize a function by its graph

Learning Objectives

Translate algebraic notions to geometric in the Cartesian plane
Graph simple functions

7. Derive the six trigonometric functions from triangle considerations

Learning Objectives

Define angle measurement
Extend angle measurement to fractions of a degree
Convert between decimal degrees and degrees/minutes/seconds
Define the trigonometric functions in terms of plane triangles
Find exact trigonometric values for common angles

8. Solve right triangle problems using trigonometry

Learning Objectives

Model real-world problems using right triangles
Solving the missing parts in such problems using trigonometry

9. Generalize methods for solving simultaneous linear equations

Learning Objectives

Visualize linear equations geometrically
Solve systems of two equations in two unknowns
Solve systems of three equations in three unknowns

10. Factor algebraic expressions

Learning Objectives

Recognize the difference of two squares
Recognize the square of a binomial
Recognize the difference of two cubes
Factor trinomials by grouping

11. Expand algebraic expressions

Learning Objectives

Multiply rational expressions
Divide rational expressions
Add rational expressions
Subtract rational expressions
Solve equations involving rational expressions

12. Solve quadratic equations

Learning Objectives

Solve quadratic equations by factoring
Solve quadratic equations by completing the square
Solve quadratic equations by quadratic formula

13. Model real-world behavior of quadratics functions

Learning Objectives

Compute the maximum or minimum of a quadratic over an interval
Find intervals of increasing or decreasing behavior
Find the axis of symmetry and intercepts
Graph quadratic functions using parts (a) through (c)

14. Extend the trigonometric functions to circles

Learning Objectives

Determine the signs of the trigonometric functions over their domains
Define the trigonometric functions for any angle

15. Model real-world problems with radian measurement of angles

Learning Objectives

Define the radian
Convert between radian and degree measurement
Apply radian radian measure to real-world problems

16. Define vectors and vector algebra

Learning Objectives

Express a vector graphically
Express a vector algebraically

17. Combine vectors to creat sums

Learning Objectives

Add two vectors graphically
Add two vectors algebraically
Find the difference of two vectors
Solve applications modeled by vectors

18. Apply trigonometry to oblique triangles

Learning Objectives

Find the remaining parts of a triangle using the Law of sines
Find the remaining parts of a triangle using the Law of cosines

SCC Accessibility Statement

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