

MTH 111 - Basic Technical Mathematics

Course Description

Effective: 2017-08-01

Provides a foundation in mathematics with emphasis in arithmetic, unit conversion, basic algebra, geometry and trigonometry. This course is intended for CTE programs. Lecture 3 hours. Total 3 hours per week.
3 credits

General Course Purpose

This course is intended for students who are in career and technical fields/degree programs requiring technical math components including trigonometry.

Course Prerequisites/Corequisites

Prerequisites: [MTE 1-3 Prereq](#) OR Corequisite: [MCR 1](#).

Course Objectives

- Communication
 - Interpret and communicate quantitative information and mathematical and statistical concepts using language appropriate to the context and intended audience.
- Problem Solving
 - Make sense of problems, develop strategies to find solutions, and persevere in solving them
- Reasoning
 - Reason and draw conclusions or make decisions with quantitative information.
- Evaluation
 - Critique and evaluate quantitative arguments that utilize mathematical, statistical, and quantitative information.
- Technology
 - Use appropriate technology in a given context.
- Students will engage in all course content described below in context to the technical fields being supported.
- Basic Skills
 - Use a scientific calculator.
 - Round-off numbers correctly.
 - Identify significant digits.
 - Use scientific notation
 - Convert between units in both standard and metric
 - Perform operations with signed numbers

- Basic Algebra
 - Apply and interpret ratios and proportions
 - Compute values in direct, indirect and inverse variation
 - Solve single variable equations
 - Locate and plot points on the xy plane
 - Interpret the concept of slope using real world examples (including vertical and horizontal lines)
 - Graph lines using a table of values with and without the domain provided
 - Graph lines using the slope-intercept method when lines are in $y=mx+b$ form and $Ax+By=C$ form
 - Write the equation of a line in slope-intercept form that models a real world situation when given the rate of change and initial value
 - Make predictions using the equation of a line
- Geometry
 - Classify triangles by their sides/angles.
 - Calculate the perimeter and circumference
 - Calculate the area of a polygon and circle
 - Apply concepts of sector and arc length of a circle
 - Recognize various geometric solids such as cylinder, cone, pyramid, prism and sphere.
 - Calculate surface area and volume of various geometric solids
 - Use the properties of inscribed and circumscribed polygons and circles to find unknown amounts
 - Apply the concept of similar triangles
 - Apply the Pythagorean theorem
 - Convert between decimal degrees and DMS notation.
 - Interpret and apply line and angle relationships.
- Trigonometry
 - Properly use terms related to an angle(s).
 - Define the trigonometric functions and their values
 - Solve right triangles and their applications
 - Identify the signs of the trigonometric function of angles greater than 90°
 - Determine trigonometric functions of any angle

Major Topics to be Included

- Basic Skills
- Basic Algebra
- Geometry
- Trigonometry