Math 1179: Applied Technical Mathematics I

Credit hours: 3 credits

Prerequisites: Math 0101 with a grade of C or better or placement in ACCUPLACER GRID 4.

Course Description

This course is the first semester of a two-semester sequence covering the essentials of applied technical mathematics. Topics include the basics of working with numerical data, plane and solid geometric shapes, introduction to functions and their graphs, factoring, operations with algebraic functions, introduction to the trigonometric functions of acute angles, solving problems involving right triangles, and expressions involving rational exponents.

Course Objectives

1. Students will become proficient in using Algebra to solve problems in Geometry and real-world applications.
2. Develop the Geometric reasoning skills needed in technical career fields.
3. Gain a better understanding of how math is used everyday to solve problems in industry.

Learning Outcomes

1. Demonstrate the ability to denote, manipulate and interpret numerical data involving the real numbers, rounding and scientific notation.
2. Understand terms of basic geometry, including lines and angles, the triangle, quadrilateral, circle, sphere, cylinder, cone, and solid figures.
3. Define a function and construct the graphs within the rectangular coordinate system. Graph a linear equation, understand the concept of slope of a line, write an equation of a line, and find the length of a line segment.
4. Perform numerical operations on polynomial expressions including the use of the distributive property and factoring.
5. Work with rational expressions by reducing, performing operations, and solving equations.
6. Understand the Trigonometric functions and use them to solve the right triangle.
7. Use, interpret, and perform operations involving rational exponents.

Course Topics

Basic Algebra
- Numbers
- Fundamental Operations of Algebra
- Calculators and Approximate Numbers
- Exponents and Unit Conversions
- Scientific Notation
- Addition and Subtraction of Algebraic Expressions
- Multiplication of Algebraic Expressions
- Division of Algebraic Expressions
- Solving Equations
- Formulas and Literal Equations

Solid Geometry
- Lines and Angles
- Triangles

- Quadrilaterals
- Circles
- Solid Geometric Figures

Functions
- Introduction to Functions
- More about Functions
- Rectangular Coordinates
- The Graph of a Function
- Graphs of Functions Defined by Tables of Data

Trigonometry
- Angles
- Defining the Trigonometric Functions
- Values of the Trigonometric Functions
- The Right Triangle
- Applications of Right Triangles

Factoring, Rational Expressions and Solving Harder Equations
- Factoring: Common Factor and Difference of Squares
- Factoring Trinomials
- The Sum and Differences of Cubes
- Equivalent Fractions
- Multiplication and Division of Fractions
- Addition and Subtraction of Fractions
- Equations Involving Fractions

Exponents
- Simplifying Expressions with Integral Exponents
- Fractional Exponents

Lines
- Basic Definitions
- The Straight Line