Virginia Western Community College
MTH 111
Basic Technical Mathematics

Prerequisites
Satisfies MTE 1-3 or MDE 10

Course Description
Provides a foundation in mathematics with emphasis in arithmetic, unit conversion, basic algebra, geometry and trigonometry. This course is intended for CTE programs.

Semester Credits: 3   **Lecture Hours: 3**

Required Materials

Textbook:
Basic Technical Mathematics with Calculus, Washington, 12th edition. Pearson. ISBN: 9780137582877.

Other Required Materials:
Scientific Calculator

Course Outcomes

- 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

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

Notes to Instructors

Pedagogical and Implementation Recommendations