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

  - 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

Notes to Instructors

Please contact George Studtmann with any questions about course content.

ADA Statement (PDF)
Title IX Statement (PDF)