Virginia Western Community College
Math 131
Technical Mathematics

Prerequisites
MTE 1-6 or MDE 10

Course Description
**Presents algebra through unit conversion, Trigonometry, Vectors, Geometry and Complex Numbers.
This course is intended for CTE Programs.**

Semester Credits: 3 Lecture Hours: 3 Lab/Clinical/Internship Hours: 0

Required Materials

Textbook:
Basic Technical Mathematics with Calculus by Allyn J Washington and Richard S. Evans. 12th edition
ISBN : 9780137582877
Other Required Materials:
Scientific Calculator

Course Outcomes

At the completion of this course, the student should be able to:

- 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.

- o   Use scientific and engineering notation
- o   Convert between units in both standard and metric
- o   Apply basic algebraic principles
- Geometry
  - o   Apply and interpret line and angle relationships.
  - o   Classify triangles by their sides/angles.
  - o   Calculate the perimeter of a polygon
  - o   Calculate the circumference and chord length on a circle
  - o   Calculate the area of a polygon
  - o   Calculate the area of a circle
  - o   Apply concepts of sector and arc length of a circle
  - o   Recognize various geometric solids such as cylinder, cone, pyramid, prism, sphere and conic sections.
  - o   Calculate surface area and volume of various geometric solids
  - o   Apply the concept of similar triangles
- Trigonometry
  - o   Properly use terms related to an angle(s).
  - o   Classify triangles by their sides/angles.
  - o   Know/apply the radian as a measure of an angle, convert between degrees and radians
  - 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
- Vectors
  - o   Describe vectors and their components.
  - o   Solve applications involving vectors.
  - o   Perform addition and scalar multiplication with vectors
- Complex Numbers
  - o   Interpret complex numbers and perform basic operations
  - o   Convert between forms of rectangular, and polar complex numbers
  - o   Perform basic operations with polar complex numbers

Topical Description

 Chapter 1 : Basic Algebraic Operations

Chapter 2 : Geometry

Chapter 4 : The Trigonometric Functions

Chapter 8 : Trigonometric Functions of Any Angle

Chapter 9 : Vectors and Oblique Triangles

Chapter 12 : Complex Numbers

Notes to Instructors

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