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 : 9780137582600
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.

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

ADA Statement (PDF)
Title IX Statement (PDF)