National Center for Supply Chain Automation

MASTER SYLLABUS

Technical Mathematics

Semester Credit Hours: 3.00

Prerequisites: None

## COURSE DESCRIPTION

Course concepts from arithmetic, elementary algebra, geometry and scientific notation are reviewed, extended and applied to problems from areas of technology, including electronics, facilities operation, manufacturing, welding and building energy systems.

## STUDENT LEARNING OUTCOMES

Upon successful completion of the course, students should be able to perform the following:

* Apply the fundamental operations of arithmetic with respect to integers, fractions, decimals, and percents with applications primarily from the fields of electrical and mechanical engineering (E & ME) including metal work, welding, and pulley systems;
* Apply the concepts of the elements of measurements and conversions with applications from the fields of E & ME including blueprint analysis;
* Solve algebraic equations, inequalities, and systems of equations and inequalities with applications from the fields of E & ME including metal work and blueprint analysis;
* Evaluate, manipulate, and factor polynomial and rational expressions with applications from the fields of E & ME;
* Graph straight lines and apply the concept of linear slope in problems from technology;
* Manipulate radical expressions and solve quadratic equations with applications from the fields of E & ME;
* Apply the concepts of ratio, proportion, and variation with applications from the fields of E & ME including metal work, pulley systems and blueprint analysis;
* Solve applied problem in Geometry with applications from the fields of E & ME.

**COURSE OUTLINE**

* Arithmetic
  + Operations on whole numbers
  + Applications and problem solving
  + Fractional notation and mixed numerals
  + Decimal notation
  + Applications
* Measurements
  + English system
  + Metric system
  + Conversions between the English and metric systems
  + Rates
  + Temperature
  + The decimal number system and powers of ten
  + Operations with measurements
  + Applications
* Algebra
  + Introduction to real numbers
  + Solving equations and inequalities
  + Graphs of equations
  + Polynomial operations
  + Polynomial factoring
  + Rational expressions and equations
  + Graphs, slopes, and applications
  + Systems of equations and inequalities
  + Radical expressions and quadratic equations
  + Ratio, proportion, and variation
  + Applications
* Geometry
  + Length and area
  + Perimeter
  + Areas of parallelograms, triangles, and trapezoids
  + Circles
  + Pythagorean Theorem
  + Angles and triangles
  + Solids and volumes
  + Applications