NVCC COLLEGE-WIDE COURSE CONTENT SUMMARY
MTH 116 - TECHNICAL MATHEMATICS II (3 CR.)

Course Description

Presents algebra through exponential and logarithmic functions, trigonometry, vectors, analytic geometry, complex numbers, systems of linear equations, and quadratic equations. Lecture 3 hours per week.

General Course Purpose

To develop an understanding of the concepts of algebra, trigonometry, and logarithms and their use in, and application to, solution of technical problems.

Entry Level Competencies

Prerequisites are a satisfactory score on an appropriate proficiency exam for MTH 155 and Algebra I and Geometry or Algebra I and Algebra II or equivalent.

Course Objectives

The objective of these two courses is to provide the necessary background in mathematics for further studies in engineering technology.

Major Topics To Be Included

A. Logarithmic Functions & Exponential Functions using the scientific calculator:
   1. Common logs
   2. Natural logs
   3. Applications of both common and natural logs
   4. Solving logarithmic equations.

B. Trigonometric Functions using the scientific calculator
   1. Review of Right Triangle Trigonometry
   2. Oblique Triangle Trigonometry
      a. Law of Sines
      b. Law of Cosines
      c. Applications of Law of Sines and Cosines
   3. Circular Functions
   4. Graphs of Sin x, Cos x, and Tan x
      a. amplitude
      b. period and frequency
      c. phase shift
      d. displacement

C. Vectors in 2 and 3 Space
   1. Addition
   2. Representations
   3. Dot and Cross Product
   4. Application in solving problems using vectors

D. Complex Numbers
   1. Arithmetic Computations
   2. Representations
      a. rectangular components
b. polar components
c. exponential form

3. Graphical Methods
4. Algebraic Methods
5. DeMoivre's Theorem

E. Conic Sections

**Extra Topics (optional)**

A. Computer Programming
B. Computer Software Packages