

**NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
MTH 115 - TECHNICAL MATHEMATICS I (3 CR.)**

Course Description

Presents algebra through exponential and logarithmic functions, trigonometry, vectors, analytic geometry, and complex numbers. Part I of II. 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.

Course Prerequisites/Corequisites

Prerequisites: Competency in Math Essentials Units MTE 1-6 as demonstrated through the placement and diagnostic tests, or by completion through unit 6 in an MTT course. A student who provides official evidence of a minimum mathematics score of 520 on the SAT or a minimum score of 22 on the ACT taken within the last two years may register for these courses without taking the math placement test

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. Review of Algebraic and Geometric Skills
 - 1. Square root
 - 2. Absolute value
 - 3. Algebraic manipulations involving the four fundamental operations
 - 4. Common factors
 - 5. Equations
 - 6. Geometric formulas

- B. Right triangle Trigonometry using scientific calculator
 - 1. Angles
 - 2. Trigonometric ratios
 - 3. Inverse trigonometric ratios
 - 4. Evaluation by calculator
 - 5. Extensive applications to technical areas
 - 6. Pythagorean theorem

- C. Systems of Linear Equations
 - 1. N by N systems (N = 2,3,4)
 - 2. Elimination methods
 - 3. Determinants
 - 4. Cramer's rule

- D. Algebraic Skills
 - 1. Factoring

2. Fractional expressions
3. Exponents and scientific notation
4. Radical expressions
5. Imaginary numbers and operations on them
6. Complex numbers and simple operations
7. Quadratic equations
 - a. solve by factoring
 - b. solve by quadratic formula
 - c. solve by completing the square
8. Applications using the linear and quadratic equations

E. Functions

1. Linear
2. Quadratic
3. Graphs of Linear and Quadratic functions