MATH 1710 TRIGONOMETRY FOR TECHNOLOGY

3 Credits
Offered in Lab or Lecture Format
Prerequisite required (MATH 1700 with a grade of C or better or Appropriate Placement-Test Score)

Revised 04/06/93

SYLLABUS

I. **TRIGONOMETRIC RATIOS**

A. Definitions of the six trigonometric ratios
B. Right triangles
   1. Angle-sum principle
   2. Pythagorean theorem
   3. Values of the trigonometric ratios of acute angles
   4. Values of the trigonometric ratios of special angles
      a. 30 degrees
      b. 60 degrees
      c. 45 degrees
   5. Solving right triangles
      a. For an unknown side
      b. For an unknown angle
   6. Applications of right triangles

II. **TRIGONOMETRIC RATIOS OF ANY ANGLE**

A. Reference angles for an angle
B. Trigonometric ratios
   1. Of angles between 90E and 360E
   2. Of 0E, 90E, 270E, and 360E
   3. Of angles greater than 360E
   4. Of negative angles
C. Angles expressed in terms of degrees and radians
D. Angles expressed in degrees, minutes, seconds and equivalent-degree form (using a calculator)

III. **OBLIQUE TRIANGLES**

A. Solving by law of sines
B. Solving by law of cosines
C. Word problems

IV. **VECTORS**

A. Vectors on a coordinate plane
B. Determination of
   1. Trig. ratios of standard-position angles of vectors
   2. x and y components of vectors
   3. Length of vectors

4. Direction of vectors

C. Addition of Vectors

1. Parallelogram method
2. Component method
3. Oblique-triangle method

D. Application of vectors

V. **GRAPHS OF TRIGONOMETRIC FUNCTIONS**

A. $y = a \sin(bx + c)$
B. $y = a \cos(bx + c)$
C. $y = \tan x$

VI. **IDENTITIES AND EQUATIONS**

A. Reciprocal, ratio, and Pythagorean identities
B. Solution of trigonometric equations

VII. **INVERSE TRIGONOMETRIC FUNCTIONS**

A. Definitions
B. Notation

VIII. **APPLIED GEOMETRIC PROBLEMS**

A. Arc length
B. Areas of sectors and segments of circles
C. Angular velocity

IX. **COMPLEX NUMBERS**

A. Definition of complex numbers in rectangular form
   1. Addition and subtraction of complex numbers
   2. Multiplication and division of complex numbers
B. Vector representation of complex numbers
   1. Vector addition
   2. Vector subtraction
C. Polar forms
   1. Conversion from rectangular form to polar form
   2. Conversion from polar form to rectangular form
   3. Vector multiplication and division in polar form

*Optional