I. COURSE TITLE: Technical Mathematics

COURSE NUMBER: 120     COURSE PREFIX: MATH

II. PREREQUISITES: MATH 118

III. CREDIT HOURS: 4     LECTURE HOURS: 4
LABORATORY HOURS:

OBSESSION HOURS:

IV. COURSE DESCRIPTION:

This course contains skills and applications related to the engineering technologies. Emphasis is on formulas, graphing, trigonometry, vectors, exponential, and logarithmic functions.

V. ADOPTED TEXT(S):

*Technical Mathematics*
By: Dale Ewen, Joan S. Gary, and James E. Trefzger
Prentice-Hall, 2001, 1st edition

VI. COURSE OBJECTIVES:

At the completion of this course the student will be able to:

1. make observations and perform computations involving ratio, proportion, and variation.
2. solve literal equations and evaluate formulas.
3. use the Pythagorean theorem and basic trigonometry functions to solve triangles.
4. use vectors and component vectors to solve problems.
5. interpret and use angle and radian measure.
6. graph trigonometric functions.
7. graph exponential and logarithmic functions.
8. solve exponential equations.
9. use trigonometry to solve applied problems.
VII. GRADING:

Grading will follow policy in catalog.

VIII. COURSE OUTLINE:

Chapter 1  Fundamental Concepts
1.14  Ratio and Proportion
1.15  Variation

Chapter 2  Right-Triangle Trigonometry
2.1  The Trigonometric Ratios
2.2  Values of the Trigonometric Ratios
2.3  Solving Right Triangles
2.4  Applications of the Right Triangle

Chapter 9  Trigonometric Functions
9.1  The Trigonometric Functions
9.2  Trigonometric Functions of Any Angle
9.3  Radian Measure
9.4  Use of Radian Measure

Chapter 10  Oblique Triangles and Vectors
10.1  Law of Sines
10.2  The Ambiguous Case
10.3  Law of Cosines
10.4  Applications of Oblique Triangles
10.5  Addition of Vectors: Graphical Methods
10.6  Addition of Vectors: Trigonometric Methods
10.7  Vector Components
10.8  Vector Applications
   Displacement
   Velocity
   Force

Chapter 11  Graphing the Trigonometric Functions
11.1  Graphing the Sine and Cosine Functions
11.2  Phase Shift
11.3  Graphing the Other Trigonometric Functions
11.4  Graphing Composite Curves
VIII. COURSE OUTLINE: continued

Chapter 12 Trigonometric Formulas and Identities
  12.1 Basic Trigonometric Identities
  12.2 Formulas for the Sum and the Difference of Two Angles (optional)
  12.3 Double- and Half-Angle Formulas (optional)
  12.4 Trigonometric Equations (optional)
  12.5 Inverse Trigonometric Relations
  12.6 Inverse Trigonometric Functions

Chapter 8 Exponentials and Logarithms
  8.1 The Exponential Function
  8.2 The Logarithm
  8.3 Properties of Logarithms
  8.4 Common Logarithms
  8.5 Natural Logarithms
  8.6 Solving Exponential Equations

Chapter 13 Complex Numbers
  13.1 Complex Numbers in Rectangular Form
  13.2 Trigonometric and Exponential Forms of Complex Numbers
  13.3 Multiplication and Division of Complex Numbers in Exponential and Trigonometric Forms
  13.4 Powers and Roots

IX. OTHER REQUIRED BOOKS AND MATERIALS:

Scientific calculator required.

X. EVALUATION:

Instructor will distribute method of evaluation to students.

XI. SPECIFIC MANAGEMENT REQUIREMENTS:

Assignments will be evaluated according to instructor directives.