Degree Applicable

COURSE OUTLINE

Electronics and Computer Technology 100
Technical Mathematics for Electronics

Catalog Statement

Electronics and Computer Technology 100 is designed to offer the student a comprehensive study in the mathematics specifically used in the electronics and computer technology field. Phases covered include application of algebra, DC circuit analysis, AC fundamentals, simultaneous equations, AC circuit analysis, complex numbers, logarithms, and computer number systems.

Units – 3.0
Lecture Hours – 3.0

Recommended Preparation: Eligibility for English 120 or ESL 151.

Course Entry Expectations

Skill Level Ranges: Reading 4; Writing 4; Listening/Speaking 4; Math 3.

I. Course Exit Standards

Upon successful completion of the required course work, the student will be able to:
1. demonstrate knowledge and critical thinking skills in the essentials of technical mathematics for electronics by solving at least 70% of assigned problems correctly in all phases of course;
2. use circuit analysis strategies with scientific calculators;
3. determine appropriate engineering notations and electronics units of measure.

II.   Course Content

A.	Decimal System – Review	6 hours

    1. Arithmetic functions
    2. Signed numbers
    3. Fractions
    4. Decimal fractions
    5. Powers of 10
    6. Use of calculators

B.	Algebra Fundamentals	6 hours

    1. Algebraic expressions and terms
    2. Exponents and roots
    3. Algebraic mathematic functions
    4. Linear equations

C.	DC Circuit Analysis	6 hours

    1. Ohm's Law
    2. Kirchoff's Laws
    3. Circuit theorems

D.	AC Fundamentals	6 hours

    1. The Right Triangle
    2. Frequency and Time
    3. Angular Velocity
    4. Root Mean Square (RMS)
    5. Graphing: Vectors and Phasors

E.	Simultaneous Equations	6 hours

    1. Graphical Equations
    2. Algebraic Equations
    3. Determinants

F.	AC Circuit Analysis (Resistive-Capacitive-Inductive)	6 hours

    1. Series Circuits
    2. Parallel Circuits
    3. Filters

G.	Complex Numbers	4 hours

    1. Imaginary Numbers: The "j" operator
    2. Rectangular Form
    3. Polar Form
    4. Conversions

H.	Logarithms	4 hours

     1. Common Logarithms
     2. Natural Logarithms
     3. Equations
     4. Gain Measurements and Frequency Response
     5. RC Time Constants

I.	Computer Number Systems	4 hours

     1. Binary
     2. Octal
     3. Hexadecimal
     4. Conversions
     5. Computer Arithmetic

Methods of Presentation

The following instructional methodologies may be used in the course:
1. Lecture;
2. Demonstration;
3. Videotapes;
4. Guest speakers.

III.　Assignments and Methods of Evaluation

1. Final project.
2. Regular quizzes.
3. Examination at the end of each instructional mode.
4. Final examination.

IV.　Textbook

Deem, Bill R. and Zannini, Tony, Electronics and Computer Math. 7th ed.
Prentice Hall Publishers, June, 2002.
10th Grade Textbook Reading Level. ISBN: 0-13-091127-5.