BROOME COMMUNITY COLLEGE
Binghamton, New York

COURSE TITLE Applied Algebra and Trigonometry MAT 130

CLASS LECTURE HOURS 4 **LAB HOURS** 0 **CREDIT HOURS** 4

DIVISION DEAN Julia Peacock

DEPT. CHAIRPERSON Paul O'Heron **DATE** Fall 2003

Designed for students in the Applied Tech sequence only, the course covers algebra and trigonometry emphasizing computational skills and graphing using application problems from technology fields. Topics include: function definition, graphs, exponents, logarithms, trigonometric identities, complex numbers and vectors.

List Course Content/Topics
Note: Order of topics subject to change

1. Definitions, equations and graphs of linear functions, polynomials, rational functions, exponential functions and logarithmic functions
2. Solving equations: literal, polynomial, trigonometric, logarithmic, exponential
3. Properties of logs and exponents
4. Applications of logs and exponents.
5. Trigonometric Identities
6. Law of Sines and Law of Cosines with applications
7. Complex numbers
8. Vectors

Specify Intended Student Learning Outcomes: On successful completion of this course the student will be able to:

1. Solve literal equations.
2. Solve polynomial equations.
3. Solve trigonometric equations.
4. Solve logarithmic and exponential equations.
5. Perform operations on algebraic and trigonometric expressions.
6. Define what a functions is, and graph it.
7. Perform operations defined on functions.
8. Recognize and graph linear functions, polynomials, rational functions, exponential functions and logarithmic functions.
9. Use the basic properties of logarithmic and exponential functions.
10. Recognize and use basic trigonometric identities.
11. Solve application problems using the Law of Sines and/or Law of Cosines.
12. Solve application problems using exponential functions in areas such as interest, population growth, disease, radioactive decay.
13. Solve application problems using logarithmic functions in areas as ph, Richter Scales, and decibel scales.
14. Define and recognize complex numbers.
15. Convert between rectangular and trigonometric forms for complex numbers.
16. Perform basic operations on complex numbers.
17. Represent vectors in polar and rectangular form.
18. Resolve a vector into its rectangular components.
19. Use vectors to solve application problems.

Calculator Objectives: The student should be able to:

1. Find roots of polynomials using the graphing calculator. This involves three methods: graphing, factoring and using the Numeric Solver application.
2. Solve equations using the graphing calculator. This involves graphing and using the Numerical Solver application.
3. Use Exact and Approximate output modes.
4. Understand the Graph application menus.
5. Setup and read tables to look at limiting values of functions.
6. Find minima and maxima.
7. Graph piece-wise functions.
8. Get an appropriate window and accurately sketch the graph of a relation or function.
9. Establish a trigonometric identity using the graphing calculator.

Catalog Description: Designed for students in the Engineering Technologies only, the course covers algebra and trigonometry emphasizing computational skills and graphing using application problems from technology fields. Topics include: function definition, graphs, exponents, logarithms, trigonometric identities, complex numbers and vectors.
4 Class Hours; Prerequisite: MAT 096 Elementary Algebra and Trigonometry or equivalent.