NORMANDALE COMMUNITY COLLEGE **2/24/2009**
COMMON COURSE OUTLINE
MATH 0670, ELEMENTARY AND INTERMEDIATE ALGEBRA

I. EFFECTIVE DATE OF OUTLINE

Spring Semester, 2009. To be reviewed by the department annually.

II. CATALOG DESCRIPTION

A. MATH 0670
B. Elementary and Intermediate Algebra
C. 5 Credits
D. Offered Fall and Spring Semesters
E. Prerequisite: MATH 0500 with a grade of A or placement in MATH 0670.
F. An accelerated course covering both Elementary and Intermediate Algebra (MATH 0600 and MATH 0700) in a single semester. Operations and problem solving with real numbers, polynomials and functions. Topics include graphing; linear, quadratic, rational, radical, logarithmic, and exponential equations; systems of linear equations; functions; variation. *Students enrolling in this course must have a good background in prealgebra and be prepared to devote sufficient time and effort to complete the standard two-course sequence in one term.*
Restriction: Credit will not be granted for both MATH 0670 and MATH 0700 or 0600.

III. RECOMMENDED ENTRY SKILLS/KNOWLEDGE

Students must have mastered at a superior level, and retained knowledge of, the following concepts: arithmetic operations involving signed numbers, fractions and decimals, ratios and percent, use of variables, and applied problems.

IV. OUTLINE OF MAJOR CONTENT AREAS (TOPICS)

A. Solving Linear Equations and Inequalities
B. Polynomials: Operations and Factoring
C. Graphs of Lines
D. Introduction to Data Analysis and Functions
E. Systems of Equations
F. Rational Expressions and Equations
G. Radical Expressions and Equations
H. Quadratic Equations and Functions
I. Exponential and Logarithmic Functions

V. LEARNING OUTCOMES

Upon successful completion of MATH 0670, students will be able to:

A. Apply laws of real numbers and order of operations to simplify algebraic expressions and to solve formulas for a specific variable.
B. Solve linear equations and inequalities in one variable.
C. Graph lines from tables of values and from x– and y–intercepts.
D. Determine linear equations given two points or given one point and the slope.
E. Determine the slope of a line from its graph, equation, or two points on the line.
F. Solve systems of equations by substitution, elimination and graphing.
G. Apply the rules for exponents and solve problems using scientific notation.
H. Manipulate polynomials using addition, subtraction, multiplication, and long division.
I. Factor polynomials.
J. Simplify rational expressions and solve rational equations.
K. Determine if a relation is function and identify its domain and range.
L. Simplify expressions using radicals and rational exponents; solve radical equations.
M. Perform basic operations with complex numbers.
N. Solve quadratic equations using factoring, the principle of square roots, completing the square, and the quadratic formula.
O. Use the discriminant to determine the nature of the roots (real, complex) of a quadratic equation.
P. Graph equations of the type $y = a(x-h)^2 + k$, finding the vertex, the line of symmetry, and the maximum or minimum value.
Q. Find the inverse of a relation or function and the composition of two functions.
R. Apply the properties of logarithms.
S. Convert between logarithmic and exponential functions.
T. Graph exponential and logarithmic functions and solve exponential and logarithmic equations.
U. Convert verbal expressions into algebraic form; solve applied problems.
V. Use a calculator appropriately in all Major Content Areas.

VI. METHODS USED FOR EVALUATION OF STUDENT LEARNING

The instructor will choose from among various evaluation techniques including – but not limited to – in-class testing, take-home testing, assignments, quizzes, attendance, group or individual projects, and research. The instructor will also choose a method for end-of-the-semester evaluation.

VII. SPECIAL INFORMATION

A. A calculator (scientific or graphing) is required. Calculators with symbolic manipulation capabilities (e.g. TI-89, TI-92) are NOT allowed.
B. Internet access is highly recommended as content, learning aids, and testing are available online.
C. P/NC or A-F grading option.