



COMMON COURSE OUTLINE: Course discipline/number/title: MATH 0100: Combined Elementary and Intermediate Algebra

A. CATALOG DESCRIPTION

1. **Credits:** 5
2. **Hours/Week:** 5
3. **Prerequisites (Course discipline/number):** Successful completion of MATH 0093 with a grade of A or appropriate score on RCTC placement test
4. **Co-requisites (Course discipline/number):** None
5. **MnTC Goals (if any):** NA

An accelerated course covering both Elementary and Intermediate Algebra in one semester. Providing the fundamentals of numbers, numeric and algebraic expressions and equations, fractions, exponents, radicals, linear and quadratic inequalities, systems of linear equations, and functional notation. Students enrolling in this course must have a good background in pre-algebra and must 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 0100 and MATH 0098 and MATH 0099.

B. DATE LAST REVISED (Month, year): October, 2002

C. OUTLINE OF MAJOR CONTENT AREAS:

1. Operations on numbers
2. Algebraic expressions
3. Equations
4. Polynomials
5. Inequalities
6. Expressions
7. Functions
8. Graphing
9. Conics
10. Complex numbers
11. Applications

Optional topics

1. Exponents and logarithms

D. LEARNING OUTCOMES (GENERAL): The student will be able to:

1. Operations on numbers
 - a) Simplify numeric expressions using the order of operations.
 - b) Simplify numeric expressions using the properties of numbers
2. Algebraic expressions
 - a) Add, subtract, multiply, divide polynomial expressions
 - b) Simplify expressions containing exponents; includes scientific notation
 - c) Translate English models to/from mathematical models
3. Equations
 - a) Set up equations of lines
 - i. Know slope, parallel, perpendicular
 - ii. Know point-slope, slope-intercept, standard forms
 - b) Solve absolute value equations
 - c) Solve quadratic equations by factoring, square root method, complete the square, and by using the quadratic formula.
 - d) Solve linear, rational, radical, literal equations
 - e) Solve a system of linear equations by addition, substitution, row reduction of a matrix using 2 and 3 equations in the same number of variables
4. Polynomials
 - a) Factor polynomials by greatest common factor, by grouping
 - b) Factor polynomials by difference of squares, by sum/difference of cubes.
 - c) Factor polynomials by trinomial factoring



D. LEARNING OUTCOMES (GENERAL): The student will be able to: **Continued. . .**

5. Inequalities
 - a) Solve linear inequalities in one variable
 - b) Solve absolute value linear inequalities
 - c) Solve systems of non-linear inequalities
6. Expressions
 - a) Add, subtract, multiply, divide and simplify rational expressions
 - b) Add, subtract, multiply, divide and simplify radical expressions
7. Functions
 - a) Know the definition, notation, and domain of functions
 - b) Know how to find and graph inverse functions
 - c) Know the algebra of functions, addition, subtraction, multiplication, division, and composition
8. Graphing
 - a) Graph lines
 - b) Graph parabolas by completing the square
 - c) Graph the solution of a linear inequalities in one and two variables
 - d) Graph a system of non-linear inequalities
9. Conics
 - a) Complete the square on a parabola and identify the vertex, direction of opening, and axis of symmetry
 - b) Complete the square on a circle and identify the center and radius
 - c) Identify an ellipse in standard form only
 - d) Identify a hyperbola in standard form only
10. Complex numbers
 - a) Know how to add, subtract, multiply, and divide complex numbers
11. Applications
 - a) Solve application problems such as mixing, DRT, interest

E. LEARNING OUTCOMES (MNTC): NA

F. METHODS FOR EVALUATION OF STUDENT LEARNING:

1. Tests
2. Quizzes
3. Homework
4. Group assignments
5. Projects
6. Comprehensive Final Exam (The comprehensive final exam should include but not be limited to evaluating the skills listed above in the course objectives.)

G. SPECIAL INFORMATION (if any):

A scientific calculator is required