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): Appropriate score on placement test or successful completion of MATH 0093 with grade A
4. Co-requisites (Course discipline/number): None
5. MnTC Goals (if any): NA

This course presents both Elementary and Intermediate Algebra in one semester. It includes the fundamentals of algebra, algebraic expressions, polynomials (including factoring), linear and quadratic equations (in one and two variables), rational expressions and equations, exponents, radicals, linear and quadratic inequalities (one and two variables), systems of linear equations (two and three variables), functions, and an introduction to conic sections. 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/Math 0099 series. Successful completion of this course prepares the student for entry-level college mathematics courses.

B. DATE LAST REVISED (Month, year): February, 2014

C. OUTLINE OF MAJOR CONTENT AREAS:
1. Expressions: Polynomial, Rational (including rational exponents), Radical
2. Equations: Linear, Quadratic, Rational, Radical and Absolute Value
3. Polynomials: Expressions and Equations
4. Graphs: Linear and Non-linear equations (quadratic, radical and absolute value), systems of linear and non-linear inequalities
5. Inequalities: Linear (simple and compound) and Non-linear (quadratic, rational and absolute value)
6. Systems of Equations: Linear (two and three variable), Non-linear (two variable)
7. Scientific Notation
8. Functions: Linear, Quadratic, Domain, Range
9. Conic Sections: Parabola, Circle
10. Contextual Problem Solving

D. LEARNING OUTCOMES (GENERAL): The student will be able to:
1. Apply the order of operations and properties of rational numbers to simplify and evaluate algebraic expressions
2. Solve equations: Linear, quadratic, rational (including rational exponents), absolute value, radical
3. Solve inequalities: Linear, absolute value, quadratic, rational
4. Find the slope of a line (graphically, applying the slope formula, and identifying from an equation)
5. Graph: Linear equations, non-linear equations [parabolic, absolute value, radical (square-root)], linear and non-linear inequalities
6. Apply formulas (slope-intercept, point-slope) to find the equation of a line, including parallel and perpendicular lines
7. Simplify and evaluate expressions involving integer and rational exponents
8. Multiply and divide using scientific notation
9. Add, subtract, multiply, divide and simplify expressions: polynomial, rational, radical, complex numbers
10. Factor polynomials completely (greatest common factor, trial-and-error method and/or AC method, grouping, difference of squares, perfect square trinomials, sum/difference of two cubes)
11. Solve systems of linear equations: two variables by graphing, substitution, and addition/elimination, three variables by back substitution and matrices (Gauss-Jordan Elimination)
12. Solve systems of linear equations in two variables by graphing: Linear and non-linear
13. Solve literal equations or formulas for a specified variable
14. Define and identify functions (from a table, a set of ordered pairs, a graph, an algebraic expression)
15. Identify the domain and range of a relation (from a table, a set of ordered pairs, a graph, an algebraic expression)
16. Apply the algebra of functions: addition, subtraction, multiplication, division
D. LEARNING OUTCOMES (GENERAL): The student will be able to: Continued.
17. Identify the characteristics of parabolas: vertex, direction, maximum, minimum, intercepts, axis of symmetry
18. Identify the center and radius of a circle from its equation
19. Apply the problem-solving techniques and concepts to contextual problems: Optimization of parabolic functions, systems of linear equations in two and three variables and types selected from: number, geometry, uniform motion, mixture, value, investment, and work

E. LEARNING OUTCOMES (MNTC): NA

F. METHODS FOR EVALUATION OF STUDENT LEARNING:
1. Tests
2. Quizzes
3. Homework
4. Cooperative group work
5. Writing assignments
6. Activities/Portfolios/Projects

G. RCTC CORE OUTCOME(S) ADDRESSED:
- Communication
- Critical Thinking
- Global Awareness/Diversity
- Civic Responsibility
- Personal/Professional Accountability
- Aesthetic Response

H. SPECIAL INFORMATION (if any): None