COMMON COURSE OUTLINE: Course discipline/number/title: MATH 0084: Developmental Mathematics IV

A. CATALOG DESCRIPTION
   1. Credits: 1, 2, or 3
   2. Hours/Week: Arranged
   3. Prerequisites (Course discipline/number): MATH 0081 or MATH 0082
   4. Co-requisites (Course discipline/number): None
   5. MnTC Goals (if any): NA

   This is a continuation of MATH 0081 or MATH 0082 designed for the student needing less than the full content of MATH 0082 or MATH 0083. MATH 0084 can be taken at any time a student needs only a portion of the content or MATH 0082 or MATH 0083 to complete their program prerequisites. The student will demonstrate a minimum level of 75% for the content areas in the MATH 0080 series required to complete their program prerequisites.

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

C. OUTLINE OF MAJOR CONTENT AREAS:
   1. Ratios and proportions
   2. Conversions
   3. Linear Equations and Inequalities
   4. Equations of Lines
   5. Polynomials
   6. Systems of Equations and Inequalities
   7. Factoring Polynomials
   8. Rational expressions and equations
   9. Functions
   10. Matrices
   11. Radical expressions and equations
   12. Quadratic functions and equations

D. LEARNING OUTCOMES (GENERAL): The student will be able to:
   1. Express quantities as ratios and solve basic ratio and proportion equations.
   2. Apply dimensional analysis to solve length, volume, and mass conversion problems (English/American and Metric).
   3. Graph linear equations and inequalities in two variables.
   4. Apply formulas (slope-intercept, point-slope) to find the equation of a line, or lines which are parallel or perpendicular.
   5. Simplify and evaluate expressions involving integer exponents.
   6. Add, subtract, multiply, divide, and simplify polynomial expressions.
   7. Solve systems of linear equations in two variables (by graphing, substitution, addition/elimination methods)
   8. Solve systems of linear inequalities in two variables by graphing.
   9. Apply problem solving techniques to contextual problems (types from: content areas 1-6).
   10. Factor polynomials completely (greatest common factor, trial-and-error method, and/or AC method, grouping, difference of two squares, perfect square trinomials)
   11. Solve rational equations.
   12. Simplify and evaluate rational expressions.
   13. Add, subtract, multiply, divide, and simplify rational expressions, radical expressions, and expressions involving rational exponents.
   14. Graph absolute value equations.
   15. Solve absolute value equations, absolute value inequalities, and compound linear inequalities.
   16. Evaluate functions.
   17. Apply algebra of functions (addition, subtraction, multiplication, division).
   18. Graph functions.
   19. Define and identify functions (from a set of points, a graph and/or an equation).
   20. Identify the domain and range of relations and functions.
   21. Solve systems of linear equations (two or more variables) by back substitution, matrices (Gauss-Jordan Elimination).
   22. Solve and graph equations with radicals (including rational exponents).
   23. Solve contextual problem (Pythagorean theorem, distance formula, and midpoint formula).
   24. Add, subtract, multiply, divide and simplify complex numbers.
D. LEARNING OUTCOMES (GENERAL): The student will be able to: Continued...
25. Find the conjugate and rationalize the denominator of a complex rational expression.
26. Solve quadratic equations (factoring, the square root method, completing the square, quadratic formula)
27. Identify the characteristics of parabolas (vertex, direction, maximum, minimum, intercepts, axis of symmetry) and graph and apply concepts to conceptual problems (optimization of quadratic functions)

E. LEARNING OUTCOMES (MNTC): NA

F. METHODS FOR EVALUATION OF STUDENT LEARNING:
1. Proctored computer/paper tests
2. Computer generated homework
3. Homework Notebooks/Attendance

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