ROCHESTER COMMUNITY AND TECHNICAL COLLEGE COMMON COURSE OUTLINE

Course discipline/number/title: MATH 0099: Intermediate Algebra

A. CATALOG DESCRIPTION
1. Credits: 4
2. Hours/Week: 4
3. Prerequisites (Course discipline/number): MATH 0094 or MATH 0098
4. Other requirements: See placement guide for Math and Reading requirements
5. MnTC Goals (if any): NA

B. COURSE DESCRIPTION: This course expands techniques, skills, and applications from the set of rational numbers to the set of real numbers. It includes radicals, quadratic equations and inequalities, systems of linear equations in three variables, functions, and an introduction to conics. Successful completion of this course prepares the student for entry-level college mathematic courses.

C. DATE LAST REVISED (Month, year): April, 2023

D. OUTLINE OF MAJOR CONTENT AREAS:
1. Equations: Quadratic, Radical and Absolute Value
2. Graphs: Non-Linear equations (quadratic, radical and absolute value) and systems of linear and non-linear inequalities
3. Systems of Equations: Linear (three variable), Non-Linear (two variable)
4. Inequalities: Linear (compound), Non-Linear (quadratic, rational and absolute value)
5. Expressions: Radical, Rational, Exponential
6. Functions: Linear, Quadratic, Domain, Range

E. LEARNING OUTCOMES (GENERAL): The student will be able to:
1. Solve equations:
   a) Methods: factoring (including sum and difference of cubes), square root method, completing the square and the quadratic formula.
   b) Types: quadratic (including complex number solution sets), absolute value, rational, rational exponents, and radical.
2. Solve systems of linear equations of three or more variables algebraically and by matrices (Gauss-Jordan Elimination).
3. Solve Inequalities: Compound linear, absolute value, quadratic, rational, and systems of nonlinear.
4. Perform operations, evaluate and simplify:
   a) Expressions involving rational exponents.
   b) Radical expressions.
   c) Complex numbers.
   d) Functions.
5. Identify from a table, a set of ordered pairs, a graph, and an algebraic expression:
   a) Relations and functions.
   b) Domain and range.
6. Identify the characteristics of parabolas: vertex, direction, maximum, minimum, intercepts, and axis of symmetry.
7. Recognize and graph
   a) Quadratic, absolute value, and radical functions.
   b) Relations (including circles).
8. Apply concepts to contextual problems: optimization of parabolic functions, systems of linear equations in three variables (i.e. mixture, investment).

F. LEARNING OUTCOMES (MNTC): NA

G. METHODS FOR EVALUATION OF STUDENT LEARNING: Methods may include but are not limited to:
1. Exams
2. Homework
3. Quizzes

G. METHODS FOR EVALUATION OF STUDENT LEARNING: Methods may include but are not limited to: Continued. . .

4. Writing assignments, Activities, Portfolios, Projects

H. RCTC CORE OUTCOME(S). This course contributes to meeting the following RCTC Core Outcome(s): Critical Thinking. Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.

I. SPECIAL INFORMATION (if any): None