

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): MATH 0093
4. Other requirements: See placement guide for Math and Reading requirements
5. MnTC Goals (if any): NA

B. COURSE DESCRIPTION: 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. Successful completion of this course prepares the student for entry-level college mathematics courses. Students enrolling in this course must have a good background in pre-algebra (successful completion of MATH 0093 with a grade of A is recommended) 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.

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

D. OUTLINE OF MAJOR CONTENT AREAS:

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

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

1. Apply graphing linear equations and linear inequality concepts.
 - a) Determine the slope of a line.
 - b) Apply a formula (slope-intercept, point-slope) to find the equation of a line.
 - c) Write equations for parallel or perpendicular lines.
2. Solve equations:
 - a) Methods: factoring (including sum and difference of cubes), square root method, completing the square and the quadratic formula.
 - b) Types: linear, quadratic (including complex number solution sets), absolute value, rational, rational exponents, radical, and literal for a specified variable.
3. Solve systems of linear equations of two and three variables graphing, substitution, addition/elimination, and by matrices (Gauss-Jordan Elimination).
4. Solve Inequalities: Simple and compound linear, absolute value, quadratic, rational, and systems of nonlinear.
5. Perform operations, evaluate, and simplify:
 - a) Expressions involving integer and rational exponents.
 - b) Radical expressions.
 - c) Complex numbers.
 - d) Functions.
 - e) Scientific Notation.
6. Identify from a table, a set of ordered pairs, a graph, and an algebraic expression:
 - a) Relations and functions.
 - b) Domain and range.
7. Identify the characteristics of parabolas: vertex, direction, maximum, minimum, intercepts, and axis of symmetry.
8. Recognize and graph
 - a) Quadratic, absolute value, and radical functions.

- E. LEARNING OUTCOMES (GENERAL): The student will be able to: Continued. . .
b) Relations (including circles).
9. 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
4. Writing assignments,
5. Activities
6. Portfolios
7. Projects
- H. RCTC CORE OUTCOME(S). This course contributes to meeting the following RCTC Core Outcomes(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