Eastern WV Community & Technical College
Master Course Record

Course Prefix and Number: MTH 103
Course Title: Transitional Math Level C
Recommended Transcript Title (if over 40 characters) Transitional Math Level C
Date Approved/Revised 11/13/14
Credit Hours: 4 **Contact hours per week (Based on 15 week term):** **Lecture:** 4 **Lab:**
Prerequisite: **Corequisite:** **Pre/Corequisite:**
Grading Mode: A, B, C, or NC. Students may test out of this course by passing a challenge test at 80% or better prior to starting the course. A challenge fee applies.
Catalog Description: This course is designed to allow students to improve basic algebra skills and prepare students for college mathematics applications. Topics include real number operations; linear equations and inequalities; exponents and scientific notation; polynomial operations; factoring; quadratic, radical, and rational equations; graphing; systems of linear equations; and function concepts with basic math review integrated throughout the course as needed. This course *does not* satisfy the general education requirements of a college-level math course.
Course Outcomes: 1. Perform operations with real numbers 2. Solve linear equations and inequalities 3. Graph linear equations and use function notation 4. Solve systems of equations 5. Apply the rules of exponents 6. Perform operations on polynomials 7. Factor polynomials and solve quadratic equations 8. Perform operations on rational expressions 9. Evaluate and simplify radical expressions
Implementation Cycle: Fall and Spring semesters
Role in College Curriculum: (Check all that apply) □ **General Education Core (Specify category)** □ **Technical Core (Specify Program)** □ **Restricted Elective (Specify Program)** □ **General Elective** □ **Workforce Education** **X Other (Please specify)** Transitional Course
Course Fee:
Instructor's Qualifications: Bachelor's Degree with relevant teaching experience.
Expanded Course Description This course will feature instructor-led classes emphasizing student participation,

collaborative learning and hands-on activities, plus a lab with computer-assisted tutorials that students can access outside of regular class time.

Expanded course outcomes:

1. Perform operations with real numbers
    a. Plot real numbers on a number line
    b. Add, subtract, multiply, and divide signed numbers
    c. Find the absolute value of a number
    d. Apply the order of operations to evaluate numerical expressions
    e. Classify numbers as belonging to common subsets of real numbers (e.g., natural, integer, rational, real)
    f. Evaluate algebraic expressions containing variables when given specific values for the variable(s)
    g. Use properties of numbers to simplify algebraic expressions
    h. Translate verbal phrases into algebraic expressions
2. Solve linear equations and inequalities
    a. Determine whether a given number is a solution of an equation
    b. Recognize the difference between an expression and an equation
    c. Translate verbal phrases or sentences into algebraic expressions or equations
    d. Solve linear equations using the addition and multiplication principles, including multi-step problems
    e. Solve equations by removing parentheses and combining like terms
    f. Solve equations by clearing fractions
    g. Solve linear inequalities in one variable and graph the solution on a number line
    h. Solve applied problems by identifying a variable, writing an equation, solving, checking and stating the answer, including units when applicable
    i. Use formulas to solve application problems
    j. Solve formulas for a specified variable
    k. Use percent equations to solve discount, percent change, and direct translation percent applications
    l. Solve problems modeled by linear inequalities
3. Graph linear equations and use function notation
    a. Read and interpret bar graphs and line graphs with attention to axis units, scale, and interpretation of changes in heights over time
    b. Determine whether an ordered pair is a solution of a linear equation in two variables
    c. Find the missing coordinate of an ordered pair solution, given one coordinate of the pair
    d. Name the parts of a rectangular coordinate system and plot ordered pairs presented in a table or list
    e. Graph linear equations of the forms $y = mx + b$, $Ax + By = C$, $x = a$, and $y = b$
    f. Find the intercepts of a graph of a linear equation (from a graph or algebraically)
    g. Find the slope of a line, given two points on the line

h. Find the slope of a line from its equation
i. Find the slopes of horizontal and vertical lines
j. Identify whether a pair of lines is parallel or perpendicular
k. Find the slope of a line as the rate of change in an applied problem, stating the units associated with the slope
l. Write the equation of a line given the slope and y-intercept, slope and a point on the line, or two points on a line
m. Apply the point-slope form to application problems (linear modeling)
n. Identify the domain and range of a function
o. Use function notation and evaluate functions

4. Solve systems of equations
   a. Determine whether an ordered pair is a solution to a system of equations
   b. Solve systems of two linear equations by graphing
   c. Determine the number of solutions of a system of equations without solving
   d. Solve systems of two linear equations by substitution
   e. Solve systems of two linear equations by elimination
   f. Solve applied problems using systems of equations
5. Apply the rules of exponents
   a. Evaluate numeric and algebraic expressions containing exponents
   b. Use the rules of exponents to simplify expressions
   c. Simplify expressions containing negative exponents
   d. Convert between scientific notation and decimal notation
   e. Multiply and divide using scientific notation
   f. Apply the Pythagorean Theorem to solve for the hypotenuse or leg of a right triangle
6. Perform operations on polynomials
   a. Identify terms, like terms, coefficients, and degree of a polynomial and distinguish between polynomial and non-polynomial expressions
   b. Evaluate a polynomial for a given value of the variable(s)
   c. Simplify polynomials by combining like terms
   d. Write a polynomial in standard form
   e. Add and subtract polynomials
   f. Multiply polynomials
   g. Find special products of polynomials
   h. Divide a polynomial by a monomial
7. Factor polynomials and solve quadratic equations
   a. Factor the greatest common factor from the terms of a polynomial
   b. Factor by grouping
   c. Factor trinomials of the form $x^2 + bx + c$
   d. Factor trinomials of the form $ax^2 + bx + c$
   e. Factor perfect square trinomials and the difference of squares
   f. Solve quadratic equations by factoring
   g. Solve applied problems involving factorable quadratic equations
   h. Solve quadratic equations using the square root property
   i. Use the quadratic formula to solve quadratic equations

j. Approximate solutions to a quadratic equation
k. Graph a quadratic function and identify its intercepts and vertex

8. Perform operations on rational expressions
    a. Evaluate rational expressions
    b. Identify values for which rational expressions are undefined
    c. Simplify rational expressions
    d. Multiply and divide rational expressions
    e. Convert between units of measure
    f. Add and subtract rational expressions
    g. Solve rational equations
    h. Simplify complex fractions
9. Evaluate and simplify radical expressions
    a. Use the vocabulary associated with roots or radicals appropriately
    b. Compute roots of real numbers and distinguish among rational, irrational, and imaginary (non-real) roots
    c. Simplify radicals with or without variables using the product and quotient rules
    d. Add and subtract radical expressions
    e. Simplify radical expressions by multiplying, dividing, and rationalizing
    f. Solve radical equations

Prepared by: Andrea Williams, Mathematics Instructor 11/13/14

Name, Title Date

Approved Per LOT Minutes

Dean, Academic and Student Services Date