

College Algebra (MA 135)

A one-semester course for dual credit (CGHS and Butler CCC)

Prerequisite: ACT math score = 21 or
Asset test placement score or
MA 120 or MA 125 with C or better

Topics:

1. Algebra Review
 - a. Real number system
 - b. Absolute Value
 - c. Order of operations
 - d. Addition, Subtraction and Multiplication of Polynomials
 - e. Factoring
 - f. Rational expressions
 - g. Radical expressions
 - h. Rational exponents
 - i. Solving linear and quadratic equations
2. Graphs, Functions, and Models
 - a. Solutions of equations from graphs
 - b. Function notation
 - c. Domain and range
 - d. Linear functions
 - i. Slope
 - ii. Parallel and perpendicular lines
 - e. Increasing, decreasing, and constant functions
 - f. Relative maximum and minimum
 - g. Functions defined piecewise
 - h. Sums, differences, products, and quotients of functions
 - i. Composition of functions
3. Functions, equations, and inequalities
 - a. Complex numbers
 - b. Quadratic equations and inequalities
 - c. Analyzing graphs of quadratic functions
 - d. Solving rational, radical, and absolute value equations
 - e. Compound inequalities
4. Polynomial and rational functions
 - a. Finding zeros of polynomials
 - b. Graphing polynomials
 - c. Remainder Theorem and synthetic division
 - d. Factors of polynomials
 - e. Domain and asymptotes of rational functions
 - f. Polynomial and rational inequalities
 - g. Direct, inverse, and combined variation

5. Exponential and logarithmic functions
 - a. Inverse functions
 - b. Graphing exponential functions
 - c. The number e
 - d. Graphing logarithmic functions
 - e. Properties of logarithmic functions
 - f. Solving exponential and logarithmic equations
 - g. Growth and decay and compound interest
6. System of equations and matrices
 - a. Solving systems of equations
 - b. Matrices
 - i. Identity matrix
 - ii. Inverse matrices
 - iii. Solving systems of equations with matrices