

I. COURSE INFORMATION

- A. Mathematics 105 College Algebra
- B. 3 credit hours
- C. Lial, Hornsby, and Schneider. *College Algebra*. 13th ed. New Jersey: Pearson, 2020
- D. Prerequisites: ACT score 20 and above; or Accuplacer score Next Gen 263 and above; or completion of MAT 103 with a C grade or above
- E. KRSN: MAT 1010 College Algebra

The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents.

II. COURSE DESCRIPTION

This course covers basic topics in algebra, including the solution of linear and quadratic equations, factoring, graphing, inequalities, rational and irrational numbers and functions, plus logarithms, determinants and matrices.

III. LEARNING OUTCOMES

- A. Analysis and graphing of functions and equations
 - Use functional notation
 - Recognize and distinguish between functions and relations (equations)
 - Use concepts of symmetry, intercepts, left- and right-hand behavior, asymptotes, and transformations to sketch the graph of various types of functions (constant, linear, quadratic, absolute value, piecewise-defined, square root, cubic, polynomial, rational, exponential, and logarithmic) or relations (circle) given in description
 - Determine the domain and range of a function
 - Write the equation that describes a function (for types given above) or circle given its description
 - Use graphs of functions for analysis
 - Find arithmetic combinations and composites of functions
 - Find the inverse of a function
- B. Solutions of equations and inequalities
 - Solve equations listed in the third bullet above, i.e., literal equations, quadratic equations by factoring and the quadratic formula, equations involving rational expressions, equations involving radicals, and equations involving absolute value expressions, along with equations involving exponential or logarithmic functions
 - Solve inequalities of the following types: linear (in one and two variables), polynomial, rational, absolute value
 - Solve systems of inequalities by graphing
 - Apply equations from the first bullet in this core outcome to real-world situations, including but not limited to depreciation, growth and decay, and max/min problems
 - Examine and analyze data, make predictions/interpretations, and do basic modeling
 - Solve systems of equations by various methods, including matrices

IV. MAJOR CONTENT AREAS

- A. Equations and inequalities
- B. Graphs and functions
- C. Polynomial and rational functions
- D. Inverse, exponential and logarithmic functions
- E. Systems and matrixes

V. ASSIGNMENTS (may include but are not limited to)

- A. Reading assignments

- B. Homework
- C. Quizzes and exams

VI. EVALUATION METHODS (may include but are not limited to)

- A. Attendance and participation
- B. Assignments
- C. Homework problems
- D. Quizzes and exams
- E. Comprehensive final