

Mathematics 1302 – College Algebra

Student Learning Outcomes

- 1. The students will demonstrate factual knowledge including the mathematical notation and terminology used in this course.** Students will read, interpret, and use the vocabulary, symbolism, and basic definitions used in college algebra including the real numbers, exponents, radicals, polynomials, factoring, functions, equations, inequalities, and graphs.
- 2. The students will describe the fundamental principles including the laws and theorems arising from the concepts covered in this course.** Students will identify and apply the laws and formulas that result directly from the definitions; for example, the quadratic formula, rules of exponents, and properties of logarithms.
- 3. The students will apply course material along with techniques and procedures covered in this course to solve problems.** Students will use the facts, formulas, and the techniques learned in this course to simplify algebraic expressions, graph functions, and solve inequalities, equations and systems of equations.
- 4. The students will develop specific skills, competencies, and thought processes sufficient to support further study or work in this field or related fields.** Students will acquire a level of proficiency in the fundamental concepts and applications necessary for further study in academic areas requiring college algebra as a prerequisite, or for work in occupational fields requiring a background in algebra. These fields might include education, business, finance, marketing, computer science, physical sciences, and engineering, as well as mathematics.

Course Content

Textbook: *College Algebra*, by Ratti and McWaters. Content consists of the following topics, listed according to the corresponding chapters in the text. (See textbook “Contents.”) Individual instructors will supplement this core material with additional topics.

- P. Basic Concepts of Algebra:** The Real Numbers and Their Properties; Integer Exponents and Scientific Notation; Polynomials; Factoring Polynomials; Rational Expressions; Rational Exponents and Radicals.
- 1. Equations and Inequalities:** Linear Equations in One Variable; Applications of Linear Equations; Complex Numbers; Quadratic Equations; Solving Other Types of Equations; Linear Inequalities; Polynomial and Rational Inequalities; Equations and Inequalities Involving Absolute Value.
 - 2. Graphs and Functions:** The Coordinate Plane; Graphs of Equations; Lines; Relations and Functions.
 - 3. Polynomial and Rational Functions:** Quadratic Functions.
 - 4. Exponential and Logarithmic Functions:** Exponential Functions; The Natural Exponential Function; Logarithmic Functions; Properties of Logarithms.
 - 5. Systems of Equations and Inequalities:** Systems of Linear Equations in Two Variables; Systems of Linear Equations in Three Variables.