**Mathematics 1314 – College Algebra**

**Student Learning Outcomes**

**1. 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. 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. Students will apply course material along with techniques and procedures covered in this course to solve**

**problems.** Students will use the facts, formulas, and techniques learned in this course to simplify algebraic

expressions, graph functions, and solve inequalities, equations and systems of equations.

**4. 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*, 12th  Edition, by Gustafson and Hughes. The electronic supplement MindTap Mathmay also be required. The following chapters including the particular sections listed are covered.

**0. A Review of Basic Algebra:** Real Numbers; Integer Exponents and Scientific Notation; Rational Exponents and

Radicals; Polynomials; Factoring Polynomials; Rational Expressions.

**1. Equations and Inequalities:** Linear Equations and Rational Equations; Applications of Linear Equations;

Complex Numbers; Quadratic Equations; Applications of Quadratic Equations; Other Types of Equations;

Inequalities; Absolute Value.

**2. Functions and Graphs:** Functions and Function Notation;The Rectangular Coordinate System and Graphing Lines;Linear Functions and Slope; Writing and Graphing Equations of Lines.

**3. Functions:** Graphs of Functions.

**4. Polynomial and Rational Functions:** Quadratic Functions.

**5.** **Exponential and Logarithmic Functions:** Exponential Functions and Their graphs; Logarithmic Functions and

Their graphs; Properties of Logarithms; Exponential and Logarithmic Equations.

**6. Linear Systems:** Systems of Linear Equations.

**Core Curriculum Student Learning Objectives**

* **Core Objective (Critical Thinking):** Gather, analyze, evaluate, and synthesize information relevant to a question or issue. (CT1)
  + **Course Student Learning Objective:** Students will use mathematical facts, formulas, and techniques to analyze and interpret information related to algebraic expressions and equations.
  + **Assessment:** Assessment exam that demonstrates CT1.
* **Core Objective (Communication):** Develop, interpret, and express ideas through effective visual communication. (CS3)
  + **Course Student Learning Objective:** Students will create and interpret graphs of algebraic and transcendental functions.
  + **Assessment:** Assessment exam that demonstrates CS3.
* **Core Objective (Empirical and Quantitative Skills):** Manipulate and analyze observable facts and arrive at an informed conclusion. (EQS2)
  + **Course Student Learning Objective:** Students will use the facts, formulas, and techniques learned in this course to draw conclusions about the properties of various algebraic expressions, equations, and functions.
  + **Assessment:** Assessment exam that demonstrates EQS2.