

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 elementary algebra covering topics such as exponents, radicals, equations, inequalities, and polynomials.
- 2 The students will describe the fundamental mathematical principles, generalizations, and properties arising from the concepts covered in this course.** Students will identify and apply the basic operations on the real numbers and the techniques used in solving a variety of types of equations and systems of equations.
- 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 techniques learned in this course to solve application problems in a variety of topics to include business, number relations, geometric situations, and proportions.
- 4 The students will develop the basic skills and knowledge necessary to be successful in college-level mathematics courses.** Students will acquire a level of proficiency in the fundamental concepts of equation solving, algebraic manipulation, graphing, and applications to promote success in college-level math courses.

Course content

No Textbook. Software: *ALEKS, Assessment and LEarning in Knowledge Spaces*, www.aleks.com.

The following objectives are covered.

- 1. Arithmetic Readiness.** Addition, subtraction, multiplication, and division of rational numbers; and order of operations and grouping symbols.
- 2. Real Numbers and Linear Equations.** Addition, subtraction, multiplication, and division of real numbers; whole number exponents; order of operations; combining similar terms; evaluating algebraic expressions; techniques in solving first-degree and absolute value equations; solving first-degree and absolute value inequalities; literal equations; translating sentences into equations; distance-rate-time problems, and mixture problems.
- 3. Graphs and Linear Functions.** Cartesian coordinate system; graphing equations and inequalities in two variables; and linear equations in two variables.
- 4. Systems of Linear Equations.** Solving systems of equations in two variables by graphing, substitution and addition; graphical solution of a system of linear inequalities; the algebraic solution of three equations with three variables; and applications.
- 5. Exponents and Polynomial Expressions.** The laws of exponents; integer exponents; scientific notation; product of a monomial and another polynomial; the product of polynomials; factoring polynomials: the greatest common factor, factoring by grouping, factoring trinomials, formulas for factoring special products, complete factorization; quadratic equations solved by factoring; and long division of polynomials.
- 6. Rational Expressions and Functions.** Simplifying rational expressions; multiplication, division, addition and subtraction of rational expressions; simplifying complex fractions; rational equations; and applications.
- 7. Radicals and Rational Exponents.** Radicals; simplification of radicals; operations with radicals; rationalizing denominators; rational exponents; and complex numbers.
- 8. Functions.** Introduction to functions, function notation; and graphing a parabola.
- 9. Quadratic Equations and Functions.** Completing the square and quadratic formula; quadratic functions; finding the vertex and x intercepts of a parabola.