

**Course Objectives/Course Outline**  
**Spokane Community College**

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**Course Title:** Introductory Algebra

**Prefix and Course Number:** MATH 96

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**Course Learning Outcomes:**

**By the end of this course, a student should be able to:**

- Simplify polynomials using the distributive property and combining like terms.
- Add, subtract, multiply and divide polynomials.
- Solve linear equations, linear inequalities.
- Set up and solve linear application problems.
- Apply the properties of exponents to simplify integer exponents.
- Convert large and small numbers into scientific notation.
- Graph linear equations using points, slope, and intercepts.
- Solve systems of linear equations graphically and algebraically.
- Determine the slope of a line given 2 points, the equation or a graph.
- Factor polynomials using various techniques including; greatest common factor, grouping, difference of squares, perfect square trinomials and the AC method.
- Solve quadratic equations using factoring.
- Determine the restrictions of a rational and radical expression.
- Add, subtract, multiply and divide rational and radical expressions.
- Simplify complex fractions.
- Solve rational and radical equations.
- Set up and solve radical application problems which include using the Pythagorean Theorem.

**Course Outline:**

I. Review

- A. Order of Operations
- B. Polynomials
- C. Solve Linear Equations
- D. Literal Equations
- E. Linear Inequalities
- F. Applications
  - i. Integer problems
  - ii. Distance, rate, time problems
  - iii. Mixture problems
  - iv. Percent problems

II. Multiplication Focus

- A. Integer Exponents [Definitions & Rules]
  - i. Product Rule
  - ii. Power-to-a-Power Rule
  - iii. Quotient Rule
  - iv. Power of a Product Rule
  - v. Power of a Quotient Rule
- B. Combination of Exponent Rules
- C. Scientific Notation
- D. Monomial Products
- E. Distributive Property of Multiplication over Addition
- F. Special Products
  - i. FOIL

- ii. Conjugate Products
    - iii. Square of a binomial
    - iv. Cube of a binomial
- III. Two Variables (Linear Focus)
  - A. Cartesian Plane
  - B. Graphing Lines
  - C. Intercepts
  - D. Slope
    - i. Finding slope
      - a. From two points
      - b. From an equation
    - ii. Graphing with slope
    - iii. Parallel Lines
    - iv. Perpendicular Lines
  - E. Linear Equations
    - i. Slope-Intercept
    - ii. Finding Equations
      - a. Given two points
      - b. Given a point and a slope
  - F. Linear Inequalities
- IV. Systems of Linear Equations
  - A. Solving by graphing
  - B. Recognizing no solution and same line
  - C. Solving by elimination
  - D. Solving by substitution
  - E. Applications
- V. Factoring
  - A. Revisit Multiplication (in particular, the Distributive Property of Multiplication over Addition)
  - B. Greatest Common Factor
  - C. Factor versus term
    - i. Identify factors
    - ii. Identify terms
    - iii. Explain the difference between factors and terms
  - D. Factor by grouping
  - E. Factor quadratic trinomials
  - F. Factor special patterns
    - i. Perfect square trinomials
    - ii. Difference of squares
  - G. Multiple step factoring
  - H. Solve quadratic equations by factoring
- VI. Operations Involving Rational Expressions
  - A. Evaluate rational expressions
    - i. Find restrictions on rational expressions
  - B. Reduce rational expressions
    - i. Including opposite factors
  - C. Multiplication and division of rational expressions
  - D. Addition and subtraction of rational expressions
    - i. With the same denominator
    - ii. With unlike denominators
  - E. Simplify complex fractions
  - F. Solve rational equations
- VII. Introduction to Roots/Radicals
  - A. Evaluate roots of numbers
    - i. Find exact roots that result in rational numbers

- ii. Approximate roots
  - iii. Identify when a root is not a real number
- B. Evaluate roots of variables
  - i. Find roots of nonnegative variables raised to powers that are multiples of the index
- C. Simplify radicals of numbers and variables
  - i. Use the product rule for radicals to write the given radical so that the radicand contains no factor to a power greater than or equal to the index
- D. Products and quotients of radicals with the same index
- E. Addition and subtraction of radicals
- F. Pythagorean Theorem