Prepared by the Department of Mathematics
Date of Departmental Approval: November 4, 2014
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1. **Course Number: MAT035**
   Course Title: Algebra for Non-STEM

2. **Description:** An algebra course designed to prepare students for college-level non-STEM math courses, address the quantitative needs of other disciplines, and develop quantitative reasoning skills for citizenship and workplace. Concepts are introduced through meaningful applications and in-class activities. Topics include proportional reasoning, scientific notation, creating and interpreting tables and graphs, solving linear and quadratic equations algebraically, solving systems of linear equations, linear and non-linear functions, and creating mathematical models of real-world problems using technology. (5 contact hours)

3. **Student Learning Outcomes** (instructional objectives, intellectual skills)**:**
   Upon successful completion of this course, students are able to do the following.
   - Apply order of operations correctly.
   - Convert between standard and scientific notation.
   - Make comparisons and use proportional reasoning to solve problems.
   - Use signed numbers in equations and application problems.
   - Interpret and construct tables and graphs.
   - Solve linear equations and inequalities algebraically.
   - Solve systems of two linear equations and perform break-even analysis.
   - Represent a function verbally, symbolically, numerically, and graphically.
   - Identify the domain and the range of a function.
   - Combine functions verbally, symbolically, numerically, and graphically.
   - Solve quadratic equations by factoring, square-root property, and the quadratic formula.
   - Construct a scatterplot and generate a model using regression analysis.
   - Determine the equation, intercepts, and slope of a linear function.
   - Model real-world problems using linear, quadratic, rational, radical, exponential, and logarithmic functions with and without technology.
   - Analyze function notation, slope, intercepts, physical domain, physical range, and interpret their meanings.
   - Calculate rate of change with appropriate units.
   - Solve simple rational, radical, exponential, and logarithmic equations

4. **Credits:** 3 non-degree credits

5. **Satisfies General Education Requirement:** No

6. **Prerequisite:** MAT025 (Prealgebra) or satisfactory basic skills assessment score

7. **Semesters Offered:** Fall, Spring, Summer

8. **Suggested General Guidelines for Evaluation:** Grading yields a Pass/Fail/Retake or letter grade of **C-** or higher. Students who remain active in the course through to its conclusion, but fail to achieve the required level of proficiency, may at the instructor's discretion, be eligible for the "R" grade.

9. **General Topical Outline:**
   - Problem-Solving Strategies
   - Order of Operations
   - Scientific Notation
   - Problem Solving with Fractions and Decimals (Rational Numbers)
   - Comparisons and Proportional Reasoning
   - Problem Solving with Signed Numbers
   - Interpreting and Constructing Tables and Graphs
   - Solving Linear Equations and Inequalities
   - Function Sense and Linear Functions
   - Mathematical Modeling Involving Linear Functions**
   - Problem Solving with Linear Equations and Functions
   - Systems of Two Linear Equations
   - The Algebra of Functions
   - Solving Quadratic Equations Algebraically (Factoring and the Quadratic Formula)

- Mathematical Modeling Involving Quadratic Functions**
- Problem Solving with Quadratic Equations and Functions
- Introduction to Other Non-Linear Functions
- Mathematical Modeling Involving Exponential, Logarithmic, Radical, and Rational Functions**

**Using graphing calculator