## Course Abbreviation & Number:
Math 0098

## Course Title:
Pre-college Algebra

## Credit Hours:
4

## Prerequisites:
- Placement by examination

## Co-requisites:
- None

## Course Description:
This course is designed to prepare students for college level mathematics. Topics will include: real-number concepts, signed number arithmetic, linear equations and inequalities in one variable, problem solving involving linear or factorable quadratic equations as models, operations on polynomials, factoring polynomials, solving rational equations, graphing linear equations in two variables, writing equations of lines, integral and rational exponents, selected geometry concepts, systems of equations in two variables, and calculator usage.

## Expected Educational Results:
As a result of completing this course, the student will be able to do the following:

1. Apply or recognize properties of real numbers (commutative, associative, and distributive)
2. Perform the four arithmetic operations with signed numbers
3. Determine the absolute value of a numerical expression
4. Construct correct expressions and equations using algebraic symbols and notations from statements
5. Solve applications for which linear equations, quadratic equations, and linear systems are mathematical models
6. Add, subtract, multiply, and factor polynomials. Divide a polynomial by a monomial.
7. Solve the following types of equations:
   a. Linear and linear literal
   b. Quadratic with real and non-real solutions
   c. Rational leading to linear or quadratic
   d. Polynomial of degree higher than two by factoring
8. Solve linear inequalities, write the solution set in interval notation, and graph the solution set on the number line.
9. Perform the following activities with lines:
   a. Graph linear equations in standard form and slope-intercept form
   b. Find the slope of a line
c. Write the equation of a line
d. State if lines are parallel or perpendicular
e. Use the distance and midpoint formulas

10. Solve problems involving real and non-real square roots, order of operations, and scientific notation with the aid of a calculator

11. Apply properties of exponents with integral and rational exponents

12. Solve geometric problems including area and perimeter of triangles, rectangles and circles. Find the volume of a box. Use the Pythagorean Theorem.

13. Recognize and apply angle relationships including vertical angles, supplementary and complementary angles, and those in triangles

14. Solve a system of two linear equations in two variables (having no, one, or many solutions) by graphing, substitution, or elimination

15. Use a graphing calculator

General Educational Outcomes:

1. Students produce well-organized communication that exhibits logical thinking and organization, use appropriate style for audience and meet conventional standards of usage.
   - They use the logic of mathematics to manipulate expressions and perform calculations
   - They write mathematics correctly and precisely

2. Students demonstrate the ability to interpret and analyze quantitative information; apply mathematical principles and techniques; and to use mathematical models to solve applied problems.

3. Students demonstrate effective problem-solving and critical thinking skills through interpreting, presenting or evaluating ideas.
   - They solve application problems of several types
   - They determine which method to use to solve various problems
   - They read mathematics and understand its precise terminology

Course Content:

I. Real numbers, expressions, and equations
II. Exponents and polynomials
III. Linear equations and inequalities in one variable
IV. Factoring in expressions and equations
V. Linear equations in two variables plus geometric concepts in one and two variables
VI. Rational equations
VII. Quadratic equations in one variable
VIII. Simplifying radicals, including complex numbers

Assessment of Outcome Objectives

Course Grade:

Evaluation methods may include, but are not limited to, computerized module assignments, module exams, a final exam, attendance, and notebook grades. The departmental final exam will be developed by a committee of faculty. Relative weights of grade components will be
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<th><strong>Course Assessment:</strong></th>
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<td>This course will be assessed at least once per year. The assessment instrument will be designed by the college-wide Learning Support Mathematics course committee, in the form of a college-wide final exam based on the expected educational results of the course.</td>
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<th><strong>Use of Assessment Findings:</strong></th>
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<td>The Learning Support committee will discuss each assessment and recommend to the Mathematics, Computer Science, and Engineering Discipline Group curriculum changes or instructional modifications to enhance student achievement of the desired education outcomes. The assessment summary along with a time line for implementation of approved curriculum changes will be sent to the Director of Institutional Research and Planning and the Mathematics, Computer Science, and Engineering Discipline Dean.</td>
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