Course Title: Introduction to College Algebra
Course No: MAT 105
No. of Credits: 3 or 4
Associate Degree Designation: EL
Contact hrs./wk: Lecture 3
Lecture/Discussion: 
Lab: 

Course Prerequisites:
A grade of C or better in Elementary Algebra or placement based on placement test score.

Catalog Description:
Emphasizes algebraic techniques with polynomials, fractional expressions, exponents and radicals, linear and quadratic equations and inequalities. Introduction to functions, their graphs, and analytic geometry.

Course Content (A List of topics normally covered.)

The real number system.
Working with order of operations, the algebraic axioms of the real number system, set builder notation, simple and compound inequalities, and interval notation and graphs of intervals.

Linear equations, linear inequalities, and applications.
Solving linear equations and inequalities, working with formulas, solving linear literal equations, and solving application problems involving linear equations. Solving equations and inequalities involving absolute value. Solving systems of linear equations in two variables.

Integer exponents and polynomials.

Rational expressions.
Determining the domain of a rational expression, reducing rational expressions, and adding, subtracting, multiplying and dividing rational expressions. Simplifying complex fractions. Solving equations involving rational expressions. Solving applications problems involving equations of rational type.

Radicals and fractional exponents.
Simplifying radical expressions. Working with fractional exponents. Solving equations involving radicals. Solving quadratic equations via the perfect square rule, via completing the square, and via the quadratic formula.

Analytic geometry.
Working with the Cartesian coordinate system, the distance formula, the midpoint formula, and graphs of equations in two variables. Finding intercepts. Finding the slope of a straight line. Finding equations of straight lines. Working with real functions and their graphs.

Optional topics
Working with the system of complex numbers and operations on complex numbers.
Finding the domain and range of a real function. Solving systems of linear inequalities in two variables.

Software:
Graphics calculators and other software are optional.
**Content-based Department Proficiencies:**

The successful student will:

- Understand how the order of operations utilized in arithmetic extends to algebraic expressions.
- Extend the rules of integer exponents to rational exponents and learn to apply these in simplifying algebraic expressions.
- Formulate simple real world applications in one or more variables and solve them algebraically and/or graphically.
- Explore various forms of linear equations, their graphs and the interpretation of their parameters.
- Become familiar with a variety of factorization techniques and their use in solving equations involving polynomials, rational expressions and radicals.
- Work in the rectangular/Cartesian coordinate system with linear equations and other equations.
- Use the algebraic skills learned to solve real world applications problems.
- Where appropriate, use scientific/graphing calculator to explore and answer various algebraic questions.

**Colleges-wide proficiencies assigned to course:**

Students should be able to demonstrate the following:

**A. Analytical skills** Performance Indicators: Students should be able to:
1. Interpret and synthesize information and ideas.
4. Select and apply scientific and other appropriate methodologies.

**B. Quantitative skills** Performance Indicators: Students should be able to:
1. Solve quantitative and mathematical problems.
2. Interpret graphs, tables, and diagrams.

**Representative Textbooks Used For The Course:**

- Intermediate Algebra – Lial, Hornsby, Miller
- Intermediate Algebra – Martin/Gay
- Intermediate Algebra – Phillips, Butts, Shaughnessy
- Intermediate Algebra – Angel
- Intermediate Algebra – Gustafson, Frisk
- Algebra for College Students – Auvil

Approved April 22, 2006