DATE SUBMITTED: 9/25/2010

DISCIPLINE: Mathematics
COURSE TITLE: Introductory Algebra
CR.HR: 3  LECT HR: 3  LAB HR: 0  CLIN/INTERN HR: 0  CLOCK HR: 0

CATALOG DESCRIPTION
Review of all operations and properties of real numbers with special attention given to work with signed numbers. Solutions of linear equations and inequalities in one variable, using and manipulation formulas. Properties of exponential numbers, definition and basic operations with polynomials and solution of polynomial equations by factoring. Basic operations and simplification of rational expressions. Graphing linear equations in two variables.

PREREQUISITES
MATH 20 or MATH 20L or satisfactory score on the math placement test.

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)
Upon completion of this course, the student will be able to:

1) Identify and use algebraic terminology and expressions.
2) Make calculations by substituting values into algebraic expressions.
3) Identify and apply geometric and algebraic formulas.
4) Simplify and perform addition, subtraction, multiplication, and division on polynomial and rational expressions.
5) Factor polynomial expressions and solve quadratic equations using factoring.
6) Solve linear equations and inequalities.
7) Create and interpret linear graphs.
8) Determine the slope of a line from a graph or an equation and interpret slope.
9) Determine equation of a line and solve linear applications.
10) Construct and solve equations derived from applied situations.
11) Assess the reasonableness of estimates or answers.

GENERAL EDUCATION OUTCOMES (ESO)
Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.
PROGRAM-LEVEL OUTCOMES

CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes may be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

1. Homework exercises (1-11)
2. Journal of vocabulary and processes (1-11)
3. Tests on skills and concepts (1-11)
4. Projects that involve collecting and/or analyzing data (1-11)
5. Reports on mathematical findings (1-11)
6. Papers (1-11)
7. Portfolios (1-11)
8. Computer labs (1-11)
9. Collaborative assignments on problem solving and discovery exercises (1-11)
COURSE OUTLINE FORM

DISCIPLINE: Mathematics

COURSE TITLE: Introductory Algebra

Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Pre-algebra and introduction to algebraic expressions
   A. Sets of real numbers and the real number line
   B. Order of operations
   C. Addition, subtraction, multiplication, and division of real numbers
   D. Properties of real numbers and simplifying expressions
      1. Associative
      2. Commutative
      3. Distributive

II. Solving linear equations and inequalities
   A. Addition, subtraction, multiplication, and division properties of equality
   B. Solving linear equations
      1. Clearing fractions and decimals
      2. Linear equations with variables on both sides of the equation
   C. Solving literal equations with several variables
   D. Application problems modeled by linear equations
      1. Percent
      2. Geometry
   E. Application problems modeled by linear inequalities

III. Graphing linear equations in two variables
   A. Introducing the Cartesian coordinate system
B. Graph linear equations in two variables
   1. Setting up and completing a table of values for a linear equation of two variables
   2. Using x- and y-intercepts
   3. Horizontal and vertical
   4. Define slope of a line and interpret slope as a rate
   5. Write equation of a line using slope-intercept
   6. Write equation of a line using point-slope

C. Applications and modeling of linear equations

IV. Polynomials and properties of exponents
   A. Properties of exponents
      1. Simplify exponential expressions
      2. Multiply and divide common bases
      3. Definition of zero exponent and integer exponent
      4. Power rule
      5. Scientific notation

   B. Definition of polynomial

   C. Addition, subtraction, multiplication, and division of polynomials

V. Factoring polynomials
   A. Greatest common factor
   B. Factor by grouping
   C. Trinomials
   D. Special factorizations
      1. Difference of squares
      2. Sum of cubes
      3. Difference of cubes
      4. Perfect square trinomial
   E. Solve quadratic and higher degree equations by factoring

VI. Rational expressions
   A. Simplify and reduce rational expressions
   B. Domain restrictions of rational expression
   C. Multiplication and division of rational expressions
D. Common denominators

E. Addition and subtraction of rational expressions