This course is equivalent to the second year of high school algebra. It is taught using large group lectures in conjunction with computer assignments and laboratory work. Topics include absolute value, rational exponents, radicals, linear equations and inequalities, quadratic equations and inequalities, functional notation, linear and quadratic functions, conic sections, logarithms, exponential and logarithmic functions, linear systems in two and three variables, sequences, and series. A scientific calculator will be required. Software used requires access to a computer with Windows operating system.
MATH G030-Intermediate Algebra

OCCUPATIONAL (SAM) CODE: E
REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [ ] NUMBER REPEATS:
REQUIRED FOR DEGREE OR CERTIFICATE: No [X] Yes [ ]
GE AND TRANSFER REQUIREMENTS MET:

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:

1. rationalize the denominator of a radical expression.
2. graph a parabola and determine its vertex and axis of symmetry.
3. solve a quadratic equation using the quadratic formula.
4. determine the equation of a line given its slope and y-intercept, its slope and a point on the line, or two points on the line.
5. solve an equation containing rational expressions.

COURSE OBJECTIVES:
1. apply the algebraic rules associated with various operations and functions.
2. solve various equations and systems of equations.
3. analyze, interpret, and generate graphs involving various functions.
4. solve a variety of application problems.

COURSE CONTENT:

LECTURE CONTENT:

A. Linear and Quadratic Equations
   1. Linear equations in one variable
   2. Linear equations in two variables
      a. Slope
      b. Graphing a linear equation in two variables
      c. Finding a linear equation in two variables
   3. Quadratic equations in one variable
      a. Solving quadratic equations by factoring
      b. Solving quadratic equations by completing the square
      c. The quadratic formula
      d. Solving equations quadratic in form
   4. Applications of linear and quadratic equations in one variable
   5. Solving formulas for specified variables
   6. Solving absolute value equations

B. Inequalities
   1. Solving linear inequalities in one variable
   2. Solving linear inequalities in two variables
   3. Solving absolute value inequalities
   4. Solving quadratic inequalities in one variable

C. Introduction to Functions
   1. Definition of function
   2. Function notation
   3. Composition of functions
   4. Variation
   5. Inverse of a function

D. Systems of Equations
   1. Solving linear systems in two or three variables
2. Applications of linear systems
3. Solving nonlinear systems in two variables

E. Rational Expressions and Equations
   1. Algebraic properties of rational expressions
   2. Simplifying compound fractions
   3. Solving rational equations
   4. Applications of rational equations
   5. Radical Expressions and Equations
      a. Rational exponents
      b. Algebraic properties of radicals
      c. Solving radical equations

F. Complex Numbers
   1. Algebraic properties of complex numbers
   2. Solving quadratic equations over the complex numbers

G. Exponential and Logarithmic Functions
   1. Algebraic properties of exponential and logarithmic functions
   2. Graphing exponential and logarithmic functions
   3. Solving exponential and logarithmic equations
   4. Applications of exponential and logarithmic functions

H. Sequences and Series
   1. Definition of a sequence
      a. Closed formulas
      b. Recursive definitions
   2. Sigma notation
   3. Formulas for terms and sums of arithmetic sequences
   4. Formulas for terms and sums of geometric sequences
   5. Binomial Theorem

I. Conic Sections
   1. Distance formula
   2. Circles
      a. Standard equation of a circle
      b. Finding the center and radius of a circle
      c. Graphing a circle
   3. Parabolas
      a. Standard equation of a parabola
      b. Finding the vertex of a parabola
      c. Graphing a parabola
   4. Ellipses
      a. Standard equation of an ellipse
      b. Finding the vertices of an ellipse
      c. Graphing an ellipse
   5. Hyperbolas
      a. Standard equation of a hyperbola
      b. Finding the vertices and asymptotes of a hyperbola
      c. Graphing a hyperbola

LABORATORY CONTENT:

METHODS OF INSTRUCTION:

A. Lecture:
B. Lab:
C. Online:
D. Independent Study:

INSTRUCTIONAL TECHNIQUES:
COURSE ASSIGNMENTS:
Reading Assignments
Course software which provides explanations, worked examples, and problems to be solved

Out-of-class Assignments
none listed

Writing Assignments
Homework, quizzes, and examinations covering topics presented in the course.

METHODS OF STUDENT EVALUATION:
Final Exam
Written Assignments
Objective Examinations
Problem Solving Exercises

Demonstration of Critical Thinking:
Analysis and application of mathematical techniques presented in the course; mathematical modeling and computational methods.

Required Writing, Problem Solving, Skills Demonstration:
Homework, quizzes, and examinations covering topics presented in the course.

TEXTS, READINGS, AND RESOURCES:
TextBooks:

LIBRARY:
Adequate library resources include:

Comments:

Attachments:
Attached Files