Hawai'i Community College

Course Syllabus

COURSE TITLE: Intermediate Algebra

COURSE IDENTIFICATION: Mathematics 27

CREDIT HOURS: 3

PREREQUISITES: “C” or better in Math 25 or Math 26, or placement in Math 27.

DIVISION: Math & Natural Sciences

DEPARTMENT: Mathematics

INSTRUCTOR: James A. Schumaker

OFFICE LOCATION: EKH-225

OFFICE PHONE: (808) 974-7528

OFFICE HOURS: see current semester information

DATE: January 2011
COURSE DESCRIPTION:
Reviews real numbers, polynomials, algebraic functions, first-degree equations and inequalities. Studies quadratic equations, exponents, radicals and rational expressions and equations, complex numbers, graphing equations and inequalities in two variables, systems of equations in two and three variable, applications of first and second degree equations and an introduction to functions.

Prerequisites: C or better in Math 25 or Math 26, or placement in Math 27.

COURSE OBJECTIVES:

To review the basic operations of sets, especially the set of real numbers.
To acquire proficiency in solving linear equations and linear inequalities, including their applications.
To develop an understanding of (integer) exponents, their basic properties, and the operations of polynomials, including solving polynomial equations (up through the 3rd degree).
To develop an understanding of rational expressions, their basic operations, and of solving (basic) rational equations.
To develop an understanding of rational exponents, radical expressions, their basic operations, complex numbers, and solving radical equations.
To acquire proficiency in the graphing of linear equations (including an understanding of their properties & applications) and linear inequalities.
To acquire proficiency in solving quadratic equations, and an initial understanding of their applications.
To acquire proficiency in solving systems of linear equations.
To develop an understanding of functions, especially linear, quadratic, and polynomial functions.

In addition, as in most mathematical courses, students will be presented with the challenge of utilizing critical thinking alongside the development of communicating their analyses in a neat and ordered fashion.

INSTRUCTIONAL MATERIALS:

Textbook: INTERMEDIATE ALGEBRA
by Michael Sullivan & Katherine Struve – Second Edition

Calculators: A scientific calculator is required.

Recommended: Graph paper or engineering pad;
A loose-leaf notebook for storing HomeWork, exams, quizzes, and notes.
Chapter 1. Linear Equations & Inequalities
Linear Equations in 1-Variable; Intro to Problem Solving; Using Formulas; Linear Inequalities in 1-Variable; Rect. Coordinates & Graphs of Equations; Linear Equations in 2-Variables; Parallel/Perpendicular Lines.

Chapter 2. Relations, Functions, and More Inequalities
Relations; Intro to Functions; Functions & Graphing; Linear Functions & Models; Compound Inequalities; Absolute Value Equations & Inequalities; Variation.

Chapter 3. Systems of Linear Equations & Inequalities
Systems of Linear Equations in Two Variables; Problem Solving (Two Equations/Unknowns); Systems of Linear Equations in Three Variables; Matrices; Systems of Linear Inequalities.

Chapter 4. Polynomials Expressions & Functions
Adding & Subtracting Polynomials; Multiplying Polynomials; Dividing Polynomials; Greatest Common Factor (Factoring by Grouping); Factoring Trinomials; Factoring Special Products; General Factoring Strategy; Polynomial Equations.

Chapter 5. Rational Expressions & Functions
Multiplying & Dividing Rational Expressions; Adding & Subtracting Rational Expressions; Compound Rational Expressions; Rational Equations; Models Involving Rational Equations.

Chapter 6. Radical Expressions & Rational Exponents
$n^{th}$ Roots & Rational Exponents; Utilizing the Laws of Exponents; Utilizing the Properties of Radicals; Adding/Subtracting/Multiplying Radical Expressions; Rationalizing Radical Expressions; Functions Involving Radicals; The Complex Number System.

Chapter 7. Quadratic Equations & Functions
Completing the Square; Quadratic Formula; Quadratic Form Equations; Graphing Quadratic Functions Using Transformations; Graphing Quadratic Functions Using Properties (Curve Characteristics).