CURRICULUM COMMITTEE
01-06-01-

SOUTHERN STATE COMMUNITY COLLEGE

I. COURSE TITLE: College Algebra

COURSE NUMBER: 141

CATALOG PREFIX: MATH

II. PREREQUISITES: One of the following:
   --3 years college preparatory math
   --Appropriate score on placement test
   --Math 118

III. CREDIT HOURS: 4

LABORATORY HOURS:

LECTURE HOURS: 4

OBSERVATION HOURS:

IV. COURSE DESCRIPTION:

This course includes a study of algebra and analytic geometry with an emphasis on functions. Topics include linear, quadratic, rational equations; analytic geometry; linear, quadratic, logarithmic, exponential functions. Students whose programs recommend a college algebra course or who need to prepare for calculus should take this course.

V. ADOPTED TEXT (S):

Algebra & Trigonometry
by: Sullivan
6th edition
Prentice Hall, 2002
ISBN #0-13-091465-7

VI. COURSE OBJECTIVES: (GENERAL)

At the completion of this course the student will:

1. solve equations involving absolute values, radicals, rational expressions or polynomials.
2. solve inequalities and interpret the results.
3. recognize properties of functions, graph functions, and use functional notations.
COURSE OBJECTIVES  cont’d.

4. graph, recognize characteristics of exponential and logarithmic functions.
5. solve exponential and logarithmic equations and be able to apply these skills.
6. develop mathematical models to solve applied problems.
7. be able to use a scientific calculator and recognize its limitations.

VII. GRADING:

Grading will follow the policy in catalog.

VIII. COURSE OUTLINE:

Chapter R  Review
1 Real Numbers  (Review as needed)
2. Algebra Review  (Review as needed)
3. Geometry Review  (Review as needed)
4. Integer Exponents  (Review as needed)
5. Polynomials  (Review as needed)
6. Factoring Polynomials  (Review as needed)
7. Rational Expressions  (Review as needed)
8. Square Roots; Radicals  (Review as needed)
9. Rational Exponents  (Review as needed)

Chapter 1: Equations and Inequalities
1.1 Equations
1.2 Setting Up Equations: Applications  (Review as needed)
1.3 Quadratic Equations
1.4 Radical Equations; Equations Quadratic in Form
1.5 Solving Inequalities
1.6 Equations and Inequalities Involving Absolute Value  (Optional)

Chapter 2: Graphs
2.1 Rectangular Coordinates
2.2 Graphs of Equations
2.3 Lines
2.4 Parallel and Perpendicular Lines; Circles  (Optional)
2.5 Scatter Diagrams; Linear Curve Fitting
2.6 Variation
Chapter 3: Functions and Their Graphs
3.1 Functions
3.2 Properties of Functions
3.3 Library of Functions; Piecewise-Defined Functions
3.4 Graphing Techniques: Transformations
3.5 Operations on Functions; Composite Functions
3.6 Mathematical Models; Constructing Functions

Chapter 4: Polynomial and Rational Functions
4.1 Quadratic Functions and Models
4.2 Polynomial Functions
4.3 Rational Functions I (Optional)
4.4 Rational Functions II; Analyzing Graphs (Optional)
4.5 Polynomial and Rational Inequalities

Chapter 5: The Zeros of a Polynomial Function
5.1 Synthetic Division
5.2 The Real Zeros of a Polynomial Function
5.3 Complex Numbers; Quadratic Equations with a Negative Discriminant
5.4 Complex Zeros; Fundamental Theorem of Algebra

Chapter 6: Exponential and Logarithmic Functions
6.1 One-to-One Functions: Inverse Functions
6.2 Exponential Functions
6.3 Logarithmic Functions
6.4 Properties of Logarithms; Exponential and Logarithmic Models
6.5 Logarithmic and Exponential Equations
6.6 Compound Interest (Optional)
6.7 Growth and Decay; Newton’s Law; Logistic Models
6.8 Logarithmic Scales (Optional)

IX. OTHER REQUIRED BOOKS AND MATERIALS:

A scientific calculator is required; one that is also statistics capable is recommended. Supplemental materials are available in the Learning Resource Center.
X. **EVALUATION:**

Instructor will distribute method of evaluation to students.

XI. **SPECIFIC MANAGEMENT REQUIREMENTS:**

Assignments will be evaluated according to instructor directives.