SOUTHEAST COMMUNITY COLLEGE
DIVISION OF ARTS AND SCIENCES
Mathematics
Revision Date: 07-01-24

I. CATALOG DESCRIPTION

Course Number:	MATH1150
Course Title	College Algebra
Prerequisite(s):	Appropriate placement score, MATH1100, MATH1103, or higher
Catalog Description:	This course is the study of relations, functions and their graphs, equations and inequalities, polynomial and rational functions, exponential and logarithmic functions, systems of equations and inequalities.
Credit Hours:	3.0
Class Hours:	45
Lab Hours:	0
Total Contact Hours:	45

II. COURSE OBJECTIVES: *Course will:*

A. Demonstrate various techniques to solve equations and inequalities, including numerical, analytical and graphical
B. Introduce how to analyze and manipulate functions and their graphs
C. Demonstrate how to analyze polynomial functions
D. Demonstrate how to analyze rational functions
E. Develop the concepts of exponential and logarithmic functions
F. Demonstrate various techniques to solve systems of equations and inequalities

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

A. Student Learning Outcomes**:** *Student will be able to:*
- **1**. Solve equations and inequalities analytically and graphically
- **2.** Analyze and manipulate functions and their graphs
- **3.** Analyze polynomial functions
- **4.** Analyze rational functions
- **5.** Develop the concepts of exponential and logarithmic functions
- **6.** Solve systems of equations and inequalities

B. General Education Learning Outcomes
- **1.** GELO #5: Analytical, Quantitative, and Scientific Reasoning
  - Outcome: Apply mathematical and scientific methods to solve problems from an array of contexts and everyday situations.
  - Outcome: Effectively develop strategies, algorithms, or experiments (or performing experiments) to better describe the systems or to solve the problems.

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information)*

A. Functions and Graphs
- **1.** Represent functions numerically, graphically, and algebraically.
- **2.** Identify the domain and range of functions.
- **3.** Recognize graphs of basic functions and determine their domains
- **4.** Build new functions from basic functions by adding, subtracting, multiplying, dividing, and composing functions.
- **5.** Find inverses of functions graphically and analytically
- **6.** Algebraically and graphically represent translations, reflections, stretches, and compression of functions.

7. Evaluate and graph piecewise functions

B. Polynomial and Rational Functions.

1. Analyze and graph linear functions and use them to model authentic situations.
2. Analyze and graph quadratic functions and use them to model authentic situations.
3. Identify end behavior, find real zeros, and graph polynomial functions.
4. Divide polynomials using long division and/or synthetic division.
5. Apply the remainder and factor theorems.
6. Factor polynomials with real coefficients and find complex roots.
7. Describe the graphs of rational functions by identifying intercepts, horizontal and vertical asymptotes.
8. Solve polynomial and rational equations.
9. Solve polynomial and rational inequalities.

C. Exponential and Logarithmic Functions

1. Evaluate exponential and logarithmic expressions.
2. Identify and graph exponential and logarithmic functions.
3. Model authentic situations using exponential and logarithmic functions.
4. Convert equations between logarithmic form and exponential form.
5. Apply the properties of logarithms to rewrite expressions.
6. Solve exponential and logarithmic equations.

D. Systems of Equations and Inequalities

1. Solve systems of equations graphically and algebraically.
2. Model authentic situations using systems of equations.
3. Solve systems of inequalities graphically.

V. INSTRUCTIONAL MATERIALS

A. Required Text(s):

1. Sullivan, *Algebra & Trigonometry (MyMathLab access code)*, 12th Edition, Pearson DDA, 2024.

B. Other Resources

1. A graphing calculator.

VI. METHODS OF PRESENTATION/INSTRUCTION

A. Methods of presentation typically include a combination of the following:

1. Lecture
2. Small Group Discussion
3. Using Graphing Calculators to analyze functions

VII. METHODS OF EVALUATION

A. Methods of evaluation typically include a combination of the following:

1. Homework and Attendance
2. Quizzes and/or Worksheets
3. Hour Exams
4. Comprehensive Final Exam

B. SCC GRADING SCALE:

A+	95-100	C+	75-79	F	59 or less
A	90-94	C	70-74		
B+	85-89	D+	65-69		
B	80-84	D	60-64		

VIII. SPECIFIC COURSE REQUIREMENTS

A. A graphing calculator may be required and MyMathLab Access will be required.