SOUTHEAST COMMUNITY COLLEGE
DIVISION OF ARTS AND SCIENCES
Mathematics
Revision Date: 07-01-21
Syllabus Statements

I.   CATALOG DESCRIPTION
Course Number: MATH1150
Course Title   College Algebra
Prerequisite(s):   Appropriate placement score, MATH1100, or MATH1103
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.   Use numerical, algebraic and graphic models to solve problems and will be able to
                translate from one model to another.
        2.   Represent functions numerically, graphically, and algebraically.
        3.   Identify the domain and range of functions.
        4.   Recognize graphs of basic functions and determine their domains.
        5.   Build new functions from basic functions by adding, subtracting, multiplying, dividing,
                and composing functions.

6. Find inverses of functions and relations.
7. Algebraically and graphically represent translations, reflections, stretches, and shrinks of functions.
8. Identify appropriate basic functions with which to model real-world problems and be able to produce specific functions to model data, formulas, graphs, and verbal descriptions.

B. Polynomial and Rational Functions.
1. Recognize, solve and graph linear functions and use them to model authentic situations.
2. Recognize, solve and graph quadratic functions and use them to model authentic situations.
3. Graph polynomial functions, predict their end behavior and find their real zeros.
4. Divide polynomials using long divisions and/or synthetic division.
5. Apply the remainder theorem, factor theorem and rational root theorem.
6. Factor polynomials with real coefficients containing complex roots.
7. Describe the graphs of rational functions, identify horizontal and vertical asymptotes, and predict the end behavior of rational functions.
8. Solve rational equations and identify extraneous solutions.
9. Solve inequalities involving polynomials and rational functions.

C. Exponential and Logarithmic Functions
1. Evaluate exponential expressions.
2. Identify and graph exponential and logarithmic functions.
3. Use exponential growth and decay regression to model real-life problems.
4. Convert equations between logarithmic form and exponential form.
5. Evaluate common and natural logarithms.
6. Graph common and natural logarithmic functions.
7. Apply the properties of logarithms to evaluate expressions, and graph functions.
8. Apply the properties of logarithms to solve exponential and logarithmic equations algebraically and solve applications.
9. Use exponential and logarithmic functions to solve applications.

D. Systems of Equations and Inequalities
1. Solve systems of equations graphically and algebraically
2. Solve applications involving systems of equations
3. Solve systems of inequalities graphically

V. INSTRUCTIONAL MATERIALS
A. Required Text(s):
1. Sullivan, *Algebra & Trigonometry (MyMathLab access code)*, 11th Edition, Pearson DDA, 2019.
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.