SYLLABUS

COURSE # AND TITLE: Math 185, College Algebra **# OF CREDITS:** 3

CATALOG DESCRIPTION:
Instructs students in the knowledge of linear, piecewise, quadratic, polynomial, rational, inverse, exponential and logarithmic functions; function topics include finding the average rate of change, analyzing graphs, graphing using transformations, finding real and complex roots, and constructing functions to model real-world applications. Other topics include systems of linear equations and inequalities, matrices, linear programming, sequences and series.

Semester Offered: Fall, Spring, Summer
Prerequisites: ACCUPLACER score of 104 – 120 or Grade of "C" or better in Math 115

Common Student Learning Outcomes
Upon successful completion of San Juan College programs and degrees, the student will....

Learn	*Students will actively and independently acquire, apply and adapt skills and knowledge to develop expertise and a broader understanding of the world as lifelong learners.*
Think	*Students will think analytically and creatively to explore ideas, make connections, draw conclusions, and solve problems.*
Communicate	*Students will exchange ideas and information with clarity and originality in multiple contexts.*
Integrate	*Students will demonstrate proficiency in the use of technologies in the broadest sense related to their field of study.*
Act	*Students will act purposefully, reflectively, and respectfully in diverse and complex environments.*

GENERAL LEARNING OBJECTIVES

Upon completion of the course, the student should understand the following content areas:

1.) Functions and Graphs
2.) Linear and Quadratic equations and functions
3.) Polynomial and rational functions
4.) Exponential and logarithmic functions
5.) Linear systems and inequalities
6.) Sequences and Series
7.) Computer/Calculator usage

SPECIFIC LEARNING OUTCOMES

Upon successful completion of the course, the student will be able to …

1.1 determine whether a relation represents a function
1.2 find the value of a function
1.3 find the domain of a function
1.4 form the sum, difference, product and quotient of 2 functions and state the domain
1.5 determine even and odd functions from a graph as well as algebraically from the function
1.6 use a graphing utility to approximate local maxima or minima to determine where a function is

increasing or decreasing
1.7 find the average rate of change of a function
1.8 graph piecewise-defined functions
1.9 graph functions using vertical and/or horizontal shifts, compression or stretching and reflections
1.l0 construct and analyze functions

2.1 identify and graph linear functions
2.2 use average rate of change to identify linear functions
2.3 solve applications of linear functions
2.4 construct a linear model using direct variation
2.5 recognize quadratic functions from the graphical and algebraic representation
2.6 solve quadratic equations algebraically using factoring, square root method, completing the square, and the quadratic formula.
2.7 find the vertex, axis of symmetry and intercepts of a quadratic function
2.8 find the maximum or minimum value of quadratic functions
2.9 solve applied problems by building quadratic functions
2.10 find the complex zeros of a quadratic function
2.11 find the vertex of a parabola algebraically and graphically
2.12 solve equations that are quadratic in form

3.1 identify and visualize the general shape of a given polynomial function
3.2 identify the zeros of a polynomial function and their multiplicity
3.3 analyze and graph polynomial functions
3.4 find the domain of a rational function
3.5 find the vertical, horizontal and/or oblique asymptotes of a rational function
3.6 solve polynomial and rational inequalities
3.7 use the Remainder and Factor Theorems along with Descartes' Rule of Signs and the Rational Zeros Theorem to find real zeros of polynomial functions
3.8 form a polynomial function with specified zeros
3.9 find the complex zeros of a polynomial

4.1 form composite functions
4.2 find the domain of a composite function
4.3 determine whether a function is One-to-One
4.4 find the inverse of a function defined by an equation, graph, or ordered pairs
4.5 evaluate and graph exponential and logarithmic functions
4.6 convert between exponential and logarithmic expressions
4.7 determine the domain and range of exponential and logarithmic functions
4.8 solve logarithmic and exponential equations
4.9 solve applications modeled by exponential functions

5.1 solve systems of equations with 2 or 3 unknowns by substitution and elimination methods
5.2 identify inconsistent systems of equations containing 2 or 3 variables
5.3 express the solution of a system of dependent equations containing 2 or 3 variables
5.4 find determinants of 2x2 and 3x3 matrices.
5.5 perform matrix addition, subtraction, and multiplication.
5.6 solve systems of equations using matrices
5.7 solve linear programming problems

6.1 find any term in a sequence when given a formula for the nth term of the sequence
6.2 find the formula for the general term a_n in a given arithmetic or geometric sequence
6.3 find the sum of an indicated number of terms in an arithmetic or geometric sequence
6.4 write a series given in sigma notation in its expanded form and vice versa
6.5 solve applied problems involving sequences and series

7.1 utilize a graphing calculator to view and discuss above objectives

OTHER REQUIREMENTS:

A **TI-83 Plus or TI-84 Plus Graphing Calculator** is required for the course. Graphing calculators capable of symbolic manipulation (such as TI-89 or TI-92 and other such calculators) will not be allowed on examinations.

Dean of School of Math and Science_____ Date: 12-17-08

A current syllabus must be on file in the dean's office for every course being taught during a given semester.