Math 260S: Precalculus with Supports

1. COURSE CONTENT AND OBJECTIVES:

Lecture: (Outline reflects course description, all topics covered in class).		Lecture: (Use action verbs - see Bloom's Taxonomy for 'action verbs requiring cognitive o utcomes.')
Polynomial and rational functions: Quadratic functions, polynomial functions, dividing polynomials, real zeros of polynomials, complex numbers, complex zeros, the fundamental theorem of algebra, and rational functions.	15	Graph quadratic functions using the standard form. Find the maximum and minimum values of a quadratic function and model with quadratic functions. Â Graph basic polynomial functions. Determine the end behavior of a polynomial by considering the leading term. Use zeros to graph polynomials. Determine the shape of a graph near a zero. Find local maxima and minima of polynomials. Perform long division of polynomials, use synthetic division to evaluate a polynomial. Apply the Remainder and the Factor Theorems to polynomials. Find the rational zeros of a polynomial. Apply Descartes' Rule of Signs and find the upper and lower bounds for zeros of polynomials. Â Apply arithmetic operations on complex numbers. Find square roots of negative numbers. Determine all complex solutions of quadratic equations. Apply the Fundamental Theorem of Algebra to quadratic factors of a polynomial. Â Find all asymptotes of rational functions. Graph rational functions.
Exponential and logarithmic functions: Exponential functions, the natural exponential function,Â logarithmic functions,Â laws of logarithms,Â exponential and logarithmic equations, andÂ modeling with exponential and logarithmic functions.	15	Draw graphs of exponential functions and logarithmic functions. Compute simple compound interest and continuously compounded interest. Apply the change of base formula. Solve

		infinite geometric series. Â Calculate the amount of an annuity and give the present value of an annuity. Find the monthly payment of an installment purchase. Â Define the Principle of Mathematical Induction and prove a simple conjecture by mathematical induction. Â Expand (a+b)^n and give its binomial coefficients. Prove the Binomial Theorem by using mathematical induction.
Limits: Finding limits numerically, finding limits graphically, tangent lines and derivatives, limits at infinity, limits of sequences, and areas.	13	Give the definition of a limit and estimate limits numerically and graphically. Determine whether a limit fails to exist and describe one-sided limits. Apply the limit laws and algebra to find limits, including left- and right-hand limits. Â Define tangent lines, derivatives, and instantaneous rates of change. Use the concept of limit to find the slopes of tangents, instantaneous rates of change,

1. LAB:

Lab:		Lab:
Simplifying quadratic expressions and/or solving quadratic equations by factoring, grouping, quadratic formula, and completing the square.	3	Review quadratic expressions and/or solving equations by factoring, quadratic formula, and completing the square.
Simplifying and solving rational expressions/equations respectively.	2	Review of solving rational equations.
Graphs of functions of the type: f(x) = ax + b, f(x) = ax2 + bx + c, f(x) = |x|, f(x) = square root of x, and some basic shifts.	1	Review of graphing basic functions.
Domain and range of linear, quadratic, polynomial and rational functions. Long division of polynomials.	1	Review of domain and range.
Laws of Exponents including fractional powers.	2	Review Laws of Exponents.
Inequalities: Simple, compound, rational, quadratic, and absolute value.	3	Review of inequalities.
Solving systems of equations with two or three unknowns for a unique solution.	1	Review solving systems of equations.
Solving equations: Quadratic Type, Absolute Value, fractional powers and radical.	3	Review solving Quadratic Type, Absolute Value, fractional powers and radical.
Word problems of three types: Speed/distance, rate of work and mixture.	2	Review solving word problems.
Total:	18	
Total Hrs In Protocol:	18	