Pre-Calculus 12 Course Outline

Marks Breakdown:	Unit tests/Projects	60%
	Chapter Tests	30%
	Assignments	10%
	(final exam comprises 30% of your grade)	

Marks will be cumulative.

Supplies: You will need to have a scientific calculator for this course. It is also very useful to have your own graphing calculator. If you don't have your own then you may borrow one for unit reviews and test days. You should also plan to have a supply of pens, pencils and coloured pencils, paper for notes as well as for graphing, a set of ruled index cards and a binder with 11 dividers, one for each of the sections below.

We will be integrating problem solving and communication throughout the semester so that you are given the opportunity to use the Mathematics that you have learned.

I. Introduction and Problem Solving.

II. Transformations
1. Vertical and horizontal translations
2. Vertical and horizontal compressions and expansions
3. Vertical and horizontal reflections
4. Inverse functions
5. Combinations of transformations
6. Review
7. Project
8. Test

III. Radical Functions
1. The radical function and transformations.
2. $y = \sqrt{f(x)}$ The square root of functions.
3. Solving Radical equations, algebraically and graphically.
4. Review
5. Project
6. Test

IV. Polynomial Functions
1. Review: The quadratic function and factoring trinomials
2. Characteristics of polynomials of varying degrees.
3. Dividing Polynomials and synthetic division.
4. The Remainder Theorem
5. The Factor Theorem
6. Equations and graphs of polynomial functions
7. Review
8. Project Completion
9. Test

UNIT 1 WRAP UP AND PROJECT/TEST

UNIT 2 Exponential and Logarithmic Functions

V. Exponential and Logarithmic Functions
1. Graphs of Exponential and logarithmic functions
2. Exponential and log form
3. Log laws
4. Change of base rule
5. Solving Exponential and logarithmic equations
6. Word problems for growth and decay
7. Graphing calculator applications
8. Review
9. Test

UNIT WRAP UP PROJECT/ TEST

UNIT 3 Trigonometry

VI. Trigonometric functions
1. Standard position from grade 11,
2. Arc length and sector area
3. The unit circle
4. Special triangles and the 6 trigonometric ratios
5. Graphing the basic shapes of the 3 trig functions
6. Transformations of the above graphs
7. Applications and word problems. (Including the graphing calculator)
8. Review
9. Test

VII. Trigonometric Identities
1. Reciprocal and Pythagorean Identities
2. Sum and Difference formulas, Double angle Identities
3. Practice day
4. Review
5. Test

VIII. Trigonometric Equations
1. Solving single angle trig equations
2. Using identities to solve equations
3. Solving equations using multiple angles
4. Graphing Calculator Applications
5. Review
6. Test

UNIT WRAP UP/ PROJECT

Unit 4 Equations and Functions

IX. Permutations and Combinations
1. Fundamental counting principle
2. Permutations involving both different and identical objects
3. Combinations
4. Pathways, Pascal's triangle and the binomial expansion
5. Review
6. Test

X. Rational Function
1. Transformations of rational functions
2. Analysing Rational Functions
3. Rational equations and graphs
4. Review
5. Test

XI. Function Operations
1. Sums and Differences of Functions
2. Products and Quotients of Functions
3. Composition of Functions.
4. Review
5. Test

UNIT WRAP UP/ PROJECT