Year 4IP Advanced Math Course Outline

Term 1	Topics
Unit 1	**Binomial Theorem**
1.1	Introduction to Binomial Theorem
1.2	Binomial Expansion
Unit 2	**Further Trigonometric Identities**
2.1	Addition Formulae
2.2	Double Angle Formulae
Unit 3	**Differentiation**
3.1	First Principles, Basic Differentiation and Chain Rule
3.2	Product Rule and Quotient Rule
3.3	Equations of Tangent and Normal
Term 2	
Unit 4	**Rates of Change**
4.1	Increasing and Decreasing Functions
4.2	Rates of Change
Unit 5	**Maxima and Minima**
5.1	Nature of Stationary Points
5.2	Maxima and Minima Problems
Unit 6	**Derivatives of Simple Trigonometric Functions**
6.1	Derivatives of $\sin x$, $\cos x$ and $\tan x$.
Unit 7	**Derivatives of Exponential and Logarithmic Functions**
7.1	Derivatives of Exponential Functions
7.2	Derivatives of Logarithmic Functions
Term 3	
Unit 8	**Integration**
8.1	Basic Integration and Linear Factor
8.2	Integration of Trigonometric Functions
8.3	Integration of Exponential functions and $\dfrac{1}{x}$
8.4	Definite Integral
Unit 9	**Application of Integration- Area of a Region**
9.1	Area between a curve and the x-axis
9.2	Area between a curve and the y-axis
Unit 10	**Application of Integration- Kinematics**
10.1	Displacement, velocity and acceleration