ST. MARY'S COLLEGE

FORM 6

SUBJECT- Lower 6 Pure Mathematics

Course Outline 2014-2015

Term 1

Proposed Date/Week	Unit/Section	Topic	Modules
Wk 1-2	**1.1 – Basic Algebra and Functions**	**Reasoning and logic**	**Truth Tables** **Converse and contrapositive of statements** Logical equivalence
Wk 3	1.1	Proofs	**Direct Proofs** **Proof by Counterexample** **Mathematical Induction**
Wk 4 -	1.1	Algebraic Operations	Remainder Theorem **Curve Sketching** **Factor Theorem**
Wk 5-6	**1.1**	**Logs and Exponential Functions**	Graphs of exponential and log functions Properties of the exponential and log functions Exponential and natural log functions and their graphs Laws of Logs
Wk 7-9	**1.1**	**Functions**	Injective, Surjective and bijective functions The Modulus Function Cubic Functions Inequalities
Wk 10-11	**1.2 - Trigs, Geometry and Vectors**	**Trigonometry**	Trigonometric Functions Identities Trigonometric Equations
Wk 12	**1.2**	**Geometry**	Circle Tangents and Normals Intersections between lines and curves Cartesian equations and paramentric representations of curves.

Term 2

Proposed Date/Week	Unit/Section	Topic	Modules
Wk 1-3	**1.2**	**Vectors**	Expression of vectors Operations of vectors Magnitude and direction of vectors Scalar Product of vectors **Vector equation of a line** Equation of a plane
Wk 4-5	1.3 - Calculus 1	Limits	Concept of a limit Limit Theorems Continuity and Discontinuity
Wk 6-8	1.3	Differentiation	The Gradient The derivative as a limit Rates of Change First Principles Product and Quotients Stationay points and chain rule Second derivative of functions Curve sketching Tangents and Normals to curves
Wk 9 - 10	1.3	Integration	Reverse of Differentiation Indefinite integrals Definite Integrals Application of Integration Integration of polynomials Integration of trigs Simple first order differential equations