SALEM_IMMANUEL LUTHERAN COLLEGE

S5 NSS Mathematics Teaching Schedule (2011 - 2012)

Textbook: New Century Mathematics – Book M2A, M2B (Oxford)

Class	5A	5B
Teachers	So WS	So WS

Schedule:

M2A Chapter 3 – Limits and the Number e

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
2011 Summer 12 Sep – 16 Sep Revision	● To understand the concept of the limit of a sequence ● To understand the concept of continuous and discontinuous functions, and learn how to distinguish them from their graphs ● To recognize the continuity of some special functions from their graphs ● To learn various theorems on limits of a function at a certain value ● To learn finding the limit of a function by two special limits: $\lim_{x\to 0}\frac{\sin x}{x}$ and $\lim_{x\to 0}\frac{e^x-1}{x}$ ● To learn various theorems on limits of a function at infinity and use them to find the limit	Limit of a Sequence	2	Exercise 3A
		Continuous and Discontinuous Functions	2	Exercise 3B
		Theorem on Limits	4	Exercise 3C
		Limits at Infinity	2	Exercise 3D
		Logarithmic Equations	2	
		Trigonometric Equations	3	
		Total:	15	

Quiz (1) – So WS

M2A Chapter 4 – Differentiation

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
19 Sep to 24 Oct	● To understand the concept and definition of the derivative of a function and its notations ● To learn the process of finding the derivatives of some basic functions from first principle ● To understand some basic rules of differentiation ● To learn how to find derivatives by implicit differentiation ● To understand the technique of logarithmic differentiation ● To understand the meaning of second derivative and its notations ● To learn how to find the second derivative of an explicit function	Derivative of a Function	2	Exercise 4A
		Basic Rules of Differentiation	6	Exercise 4B, 4C
		Differentiation of Trigonometric, Exponential and Logarithmic Functions	3	Exercise 4D, 4E
		Implicit Differentiation	3	Exercise 4F
		Second Derivative	3	Exercise 4G
		Total:	18	

Quiz (2) – So WS

SECOND TERM

M2A Chapter 5 – Applications of Differentiation

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
25 Oct to 5 Dec	● To find the equations of tangents and normals to a curve ● To understand the concept of increasing and decreasing functions and the concavity of a function ● To find maximum and minimum points and points of inflexion of functions and identify the global extrema ● To sketch graphs of polynomial functiosn ● To understand the concept of even and odd functions and to identify symmetry of a curve ● To identify the limitations on the values of x and y in rational functions ● To understand the concept of vertical, horizontal and oblique asymtotes of the graphs of rational functions ● To sketch graphs of rational functions ● To apply differentiation to solve the problems relating to rate of change, maximum and minimum	Tangents and Normals	2	Exercise 5A
		Maxima and Minima	3	Exercise 5B
		Point of Inflexion	4	Exercise 5C
		Sketching Graph of Rational Functions	3	Exercise 5D
		Applications of Differentiation to Practical Problems	4	Exercise 5E
		Total:	16	

Quiz (3) –So WS

First Term Exam –So WS

M2A Chapter 6 – Indefinite Integration

Date	Objectives	/ Content	Periods	Teaching Materials / Ex./ Remarks
3 Feb to 8 Mar	● To understand the concept of indefinite integration as a reverse process of differentiation ● To understand that the primitive function of a function is not unique and the meaning of the notation $\int f(x)dx$ ● To master the basic rules and properties of indefinite integration and use them to find simple indefinite integrals of algebraic functions ● To use the basic rules and properties of indefinite integration to find indefinite integrals of other functions ● To apply indefinite integration in finding the equations of curves and other physical applications ● To understand the concept of integration by substitution and to use this method to find indefinite integrals ● To learn some other techniques of integration involving trigonometric functions. ● To understand the concept of integration by parts and to use this method to find indefinite integrals.	Concept of Indefinite Integration and Basic Rules	2	Exercise 6A
		More Integration Formulae	2	Exercise 6B
		Applications of Indefinite Integration	2	Exercise 6C
		Integration by Substitution	2	Exercise 6D
		Integration Techniques Involving Trigonometric Functions	3	Exercise 6E
		Integration by Parts	4	Exercise 6F
		Total:	15	

Quiz (4) –So WS

M2B Chapter 7 – Definite Integration

Date	Objectives	/ Content	Periods	Teaching Materials / Ex./ Remarks
9 Mar to 7 May	● To recognize the concept of definite integration as the limit of a sum ● To understand the properties of definite integrals ● The Fundamental theorem of Calculus ● To find definite integrals of functions. ● To use integration by substitution to find definite integrals ● To use integration by parts to find definite integrals ● To understand the properties of the definite integrals of even, odd and periodic functions.	Concept and Properties of Definite Integrals	2	Exercise 7A
		Fundamental Theorem of Calculus	2	Exercise 7B
		Integration by Substitution	4	Exercise 7C
		Integration by Parts	3	Exercise 7D
		Other Properties of Definite Integrals	3	Exercise 7E
		Total:	14	