

IMMANUEL LUTHERAN COLLEGE

S4 NSS M2 Teaching Schedule (2009 - 2010)

Textbook: New Century Mathematics – Book 4A, 4B, M2A (Oxford)

Teachers:

Class A	Class B
Ho KC	Ho KC

Schedule (core course schedule attached for reference):

4A Chapter 1 – Number Systems

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
2 sept to 9 sept	<ul style="list-style-type: none"> ● Appreciate the development of the number systems including the system of complex numbers ● Perform addition, subtraction, multiplication and division of complex numbers 	Real number system	4	Exercise 1A
		Complex Numbers		
		Simple Arithmetic of Complex Numbers	4	Exercise 1B
		Total:	8	

4A Chapter 3 – Quadratic Equations in One Unknown

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
10 sept to 26 sept	<ul style="list-style-type: none"> ● Solve quadratic equations by the factor method ● Solve the equation $ax^2 + bx + c = 0$ by plotting the graph of the parabola $y = ax^2 + bx + c$ and reading the x-intercepts ● Solve quadratic equations by the quadratic formula ● Understand the relations between the discriminant of a quadratic equation and the nature of its roots ● Solve problems involving quadratic equations ● Form quadratic equations from given roots. 	Review – Factorization	1	
		Solving Quadratic Equations by the factor Method	2	Exercise 3A
		Graphical Method	2	Exercise 3B
		Quadratic Formula	2	Exercise 3C
		Discriminant and the Nature of Roots	2	Exercise 3D
		Problems Leading to Quadratic Equations	2	Exercise 3E
		Forming Quadratic Equations	2	Exercise 3F

	<ul style="list-style-type: none"> Understand the relations between the roots and coefficients and form quadratic equations using these relations 	Relations between Roots and Coefficients	2	Exercise 3G
		Total:	15	

4A Chapter 4 – Basic Knowledge of Functions

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
27 sep to 6 oct	<ul style="list-style-type: none"> Recognize the intuitive concepts of functions, domains and co-domains, independent and dependent variables Recognize the notation of functions and use tabular, algebraic and graphical methods to represent functions 	Basic Concept of Functions	2	Exercise 4A
		Representations of Functions	2	
		Notation of a Function	4	Exercise 4B
		Total:	8	

4A Chapter 5 – Quadratic Functions

Date	Objectives	/ Content	Periods	Teaching Materials / Ex./ Remarks
7 oct to 20 oct	<ul style="list-style-type: none"> Understand the features of the graphs of quadratic functions Find the maximum and minimum values of quadratic functions by the algebraic method 	Features of the Graphs of Quadratic Functions	2	Exercise 5A
		Completing	2	Exercise 5B
		Exploring the Properties of Quadratic Functions Using Completing the Square	2	
		Application Problems	2	
		Total:	8	

4A Chapter 6 – More About Polynomials

Date	Objectives	/ Content	Periods	Teaching Materials / Ex./ Remarks
21 oct to 3 nov	<ul style="list-style-type: none"> Perform division of polynomials Understand the remainder theorem Understand the factor theorem 	Division of Polynomials	2	Exercise 6A
		Remainder Theorem	3	Exercise 6B
		Factor Theorem	4	Exercise 6C

		Application Problems	2	Exercise 5B
		Total:	9	

4A Chapter 2 – Equations of Straight Lines

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
4 nov to 23 nov	<ul style="list-style-type: none"> ● Understand the equation of a straight line: <ul style="list-style-type: none"> ■ Find the equation of a straight line from given conditions ■ Describe the features of a straight line from its equation ● Understand the possible intersection of two straight lines 	Review	3	Exercise 2A
		Two-point form, Point slope form	3	
		Slope-intercept form, intercept form	3	Exercise 2B
		Equations of Special Straight Lines	2	
		Number of Points of Intersection of Two Straight lines	3	Exercise 2C
		Summary	2	Supp. Exercise 2
		Total:	16	

4B Chapter 10 – Rational Functions

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
24 nov to 5 jan	<ul style="list-style-type: none"> ● Understand the concepts for the greatest common divisor and the least common multiple of polynomials ● Perform addition, subtraction, multiplication and division of rational functions 	Highest Common Factor and Least Common Multiple	4	Exercise 10A
		Addition and Subtraction of Rational Functions	3	Exercise 10B
		Multiplication and Division of Rational Functions	5	Exercise 10C
		Total:	12	

SECOND TERM

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
19 jan to 20 jan	● Checking Days	First Term exam checking	4	
		Total:	4	

4B Chapter 8 – Exponential Functions

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
21 jan to 5 feb	● Understand the definitions of rational indices	Review – law of indices	2	
	● Understand the laws of rational indices	Rational Indices	2	Exercise 8A
	● Understand the properties of exponential functions and recognize the features of their graphs	Exponential Functions and their Graphs	3	
		Application of Exponential Functions	3	Exercise 8B
		Total:	10	

4B Chapter 9 – Logarithmic Functions

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
6 feb to 4 mar	● Understand the definition and properties of logarithms (including the change of base)	Definition of Logarithms	2	
	● Understand the properties of logarithmic functions and recognize the features of their graphs	Properties of Logarithms	3	
	● Solve exponential equations and logarithmic equations	Find the Values of Logs using a Calculator	2	Exercise 9A
	● Appreciate the applications of logarithms in real-life situations	Logarithmic Functions and Their Graphs	3	Exercise 9B
	● Appreciate the development of the concepts of logarithms	Exponential Equations and Logarithmic Equations	4	Exercise 9C
		Applications of Logarithms	2	Exercise 9D
		Total:	16	

4B Chapter 11 – Basis Properties of Circles

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
5 mar to 18 mar	<ul style="list-style-type: none"> ● Understand the properties of chords of a circle ● Understand the properties of angles of a circle ● Understand the properties of arcs of a circle 	Review – Basic Geometry	2	
		Basic Knowledge about Circles	2	
		Properties of Chords of a Circle	2	Exercise 11A
		Angle Properties of a Circle	3	Exercise 11B
		Relationships among Angles, Arcs and Chords	3	Exercise 11C
		Total:	12	

4B Chapter 12 – More about Basic Properties of Circles

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
19 mar to 25 apr	<ul style="list-style-type: none"> ● Understand the properties of a cyclic quadrilateral ● Understand the tests for concyclic points and cyclic quadrilaterals ● Understand the properties of tangents to a circle ● Understand the properties for angles in the alternate segments ● Use the basic properties of circles to perform simple geometric proofs 	Properties of Cyclic Quadrilaterals	2	Exercise 12A
		Tests for Cyclic Quadrilaterals	2	Exercise 12B
		Basic Properties of Tangents to Circles	2	Exercise 12C
		Tangents from an External Point	2	Exercise 12D
		Angles in Alternate Segments	2	Exercise 12E
		Geometric Proofs on Circles	2	Exercise 12F
		Total:	12	

4B Chapter 13 – Basic Trigonometry

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
26 apr	<ul style="list-style-type: none"> ● Understand the functions sine, 	Trigonometric Ratios of	2	

to 5 may	cosine and tangent ● Understand the graphs of sine, cosine and tangent and their properties, including maximum and minimum values and periodicity ● Solve the trigonometric equations $a \sin x = b$, $a \cos x = b$, $a \tan x = b$ ● Solve other trigonometric equations	Any Angle		Exercise 13A
		Signs of Trigonometric Ratios	2	
		Trigonometric Identities	2	Exercise 13B
		Transformation formula	1	
		Graphs of Trigonometric Functions	3	Exercise 13C
		Solving Trigonometric Equations	4	
		Total:	14	

M2 Begin

M2A Chapter 1 – Surd, Mathematical Induction and Binomial Theorem

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
6 may to 16 may	<ul style="list-style-type: none"> ● Rationalize denominators ● Prove identity involving rationalization of denominator ● Prove proposition involving summation of series ● Prove proposition involving divisibility ● Expand power of binomial ● Find coefficients of terms in binomial expansions 	Surds	3	Exercise 1A
		Principle of Mathematical Induction	3	Exercise 1B
		Proofs of Divisibility	2	
		Binomial Theorem	4	Exercise 1C
		Total:	12	

M2A Chapter 2 – More about Trigonometry

Date	Objectives	Content	Periods	Teaching Materials / Ex./ Remarks
17 may to 5 jun	<ul style="list-style-type: none"> ● Understand the concept of radian measure ● To find arc lengths and areas of sectors through radian measure ● To recognize trigonometric functions like cosecant, secant and cotangent and their graphs ● To learn various trigonometric identities ● To simplify expressions using trigonometric identities ● To understand compound angle formulae and double angle formulae, and product-to-sum and sum-to-product formulae 	Radian measure	2	Exercise 2A
		Trigonometric Functions and their Graphs	3	Exercise 2B
		Trigonometric Identities	2	Exercise 2C
		Compound Angle formulae	3	Exercise 2D
		Double Angle Formulae	2	Exercise 2E
		Sum and Product Formulae	3	Exercise 2F
		Total:	15	

Second Term Examination – Ho KC

~End of Schedule~