

## CONTENT DISTRIBUTION

### SUBJECT: SUBSIDIARY MATHEMATICS

Class: Senior 4

Number of periods per week: 4 Periods

Term 1: 48 periods

UNIT 1: SET OF REAL NUMBERS		12 Periods
<b>Key Unit Competence:</b> Think critically to understand and perform operations on the set of real numbers.		
Week	Content	Number of Periods
1-2	Introductory activity	1
	Set of real numbers: Real numbers, operations on the set, Arithmetic of integers and whole numbers.	1
	Equivalent fractions, ratios, proportions, and rates	1
	Absolute value and its properties	1
	Powers and radicals	1
	Operation on radicals	1
	Decimal logarithms and properties	2
3	Model simple problems involving decimal logarithms: population growth and decay	2
	Model simple problems involving decimal logarithms: compound interest and magnitude of an earthquake	1
	End unit assessment	1
UNIT 2: FUNDAMENTALS OF TRIGONOMETRY		16 Periods
<b>Key unit Competence:</b> Use the trigonometric concepts and formulas to solve related problems in Physics, Air navigation, Water navigation, bearings and Surveying.		
Week	Content	Number of periods
4	Introductory activity	1
	Angle and its measurements	1
	Unit circle	1
	Definition and identification of Trigonometric ratios of acute angles	1
5	Trigonometric ratios of special angles	2
	Trigonometric identities	2
6	Solving a triangle by cosine law	2
	Solving a triangle by Sine law	2
7	Application of trigonometry in real life: Bearing and Air plane directions	2
	Application of trigonometry in real life: Navigation, Inclined plane.	1

	End unit assessment	1
<b>UNIT 3: LINEAR, QUADRATIC EQUATIONS AND INEQUALITIES</b>		<b>12 Periods</b>
<b>Key unit Competence:</b> Model and solve algebraically or graphically daily life problems using linear and quadratic equations or inequalities.		
<b>Week</b>	<b>Content</b>	<b>Number of periods</b>
8	Introductory activity	1
	Simple linear equations in one unknown	1
	Linear equations with products or quotients	1
	Quadratic equations	1
9	Simple Linear inequalities in one unknown	1
	Product and quotient form of inequalities in one unknown	2
	Quadratic inequalities	1
10	Simultaneous equations in two unknowns	1
	Solving problems from real life situations involving equations and inequalities	2
	End unit assessment	1

<b>UNIT 4: POLYNOMIAL, RATIONAL AND IRRATIONAL FUNCTIONS ( 12 periods)</b>		<b>8/12 periods</b>
<b>Key Unit Competence:</b> Use concepts and definitions of Polynomial, Rational and Irrational functions to determine the domain of Polynomial, Rational and Irrational functions and represent them graphically in simple cases...		
<b>Week</b>	<b>Content</b>	<b>Number of periods</b>
11	Introductory activity	1
	Generalities on numerical functions	1
	Types of numerical functions	2
12	Domain of definition and range of numerical functions	1
	Parity (even, odd or n) of a numerical function	1
	Operations on numerical functions	1
	Graphical representation of polynomial, rational and irrational functions.	1
13	<b>Exam</b>	

**TERM 2: 48 periods**

<b>UNIT 4: POLYNOMIAL, RATIONAL AND IRRATIONAL FUNCTIONS (12 periods)</b>		<b>4/12 periods</b>
<b>Key Unit Competence:</b> Use concepts and definitions of Polynomial, Rational and Irrational functions to determine the domain of Polynomial, Rational and Irrational functions and represent them graphically in simple cases...		
<b>Week</b>	<b>Content</b>	<b>Number of periods</b>

1	Use of polynomial, rational and irrational functions and their interpretation in Economics or Physics	3
	End unit Assessment	1
<b>UNIT 5: Limits of Polynomial, Rational and Irrational Functions</b>		<b>12 PERIODS</b>
<b>Key Unit Competence:</b> Evaluate correctly limits of functions and apply them to solve related problems		
<b>Week</b>	<b>Content</b>	<b>Number of Periods</b>
2	Introductory activity	1
	Neighborhood of a real number, limit of a variable, definition and graphical interpretation of limit of a function	1
	One-sided limits	1
	Infinite limits and Limits at infinity	1
3	The Squeeze theorem and Operations on limits	2
	Indeterminate cases	2
4-5	Applications of limits: Continuity of a function.	2
	Applications of limits: Asymptotes to the graph of a function	2
	Real life problems about limits	3
	End unit Assessment	1
<b>UNIT 6: Differentiation of Polynomials, Rational and Irrational Functions and their Applications</b>		<b>16 Periods</b>
<b>Key Unit Competence:</b> Use the gradient of a straight line as a measure of rate of change and apply this to line tangent and normal of curves in various contexts and use these concepts of differentiation to solve and interpret related rates and optimization problems in various contexts		
<b>Week</b>	<b>Content</b>	<b>Number of Periods</b>
6	Introductory activity	1
	Concepts of derivative of a function: Definition and graphical interpretation.	2
	Rules of differentiation of elementary function.	2
7	Geometric interpretation of derivatives: Equation of the tangent to a curve, Equation of normal to a curve	2
	Hospital's theorem	2
8-9	Derivative and the table of variation of a function	3
	Application of differentiation: Rates of change and optimization problems	2
	Revision on the content of this unit	2
	End unit Assessment	1
<b>UNIT 7: VECTORS SPACE OF REAL NUMBERS</b>		<b>12periods</b>
<b>Key Unit Competence:</b> Use concepts of vectors in 2D to solve related problems such as distance, and angles.		
<b>Week</b>	<b>Content</b>	<b>Number of Periods</b>
10-12	Introductory activity	1
	Euclidian vector space in 2D	2

	Angle between two vectors	2
	Application of vectors in physics	3
	Revision on the content of this unit	3
	End unit Assessment	1
13	<b>Exams</b>	

### TERM 3: 48 Periods

<b>UNIT 8: MATRICES AND DETERMINANTS OF ORDER 2</b>		<b>12 Periods</b>
<b>Key Unit Competence:</b> Use matrices and determinants of order 2 to solve other related problems such as organization of data in a shopping, in Cryptography, in Physics (problems about quantum or circuits), ...		
<b>Week</b>	<b>Content</b>	<b>Number of Periods</b>
1	Introductory activity	1
	Definition and example of matrices	1
	Addition and subtraction of matrices and Transpose of a matrix	2
2-3	Multiplication of matrices	2
	Determinant of a matrix of order 2	1
	Inverse of a square matrix	2
	Applications of determinants in real life problems: in economics or physics	2
	End unit Assessment	1
<b>UNIT 9: MEASURES OF DISPERSION</b>		<b>12 Periods</b>
<b>Key Unit Competence:</b> Extend understanding, analysis and interpretation of data arising from problems and questions in daily life to include the standard deviation.		
<b>Week</b>	<b>Content</b>	<b>Number of Periods</b>
4-6	Introductory activity	1
	Recall on calculation of central tendencies (mean, mode and median) of statistical data	2
	Variance	3
	Standard deviation (including combined set of data) and The Coefficient of variation	3
	Application of Measures of dispersion in daily life	2
	End unit assessment	1
<b>UNIT 10: ELEMENTARY PROBABILITY</b>		<b>24 Periods</b>
<b>Key Unit Competence:</b> Use combinations and permutations to determine probabilities of occurrence of an event		
<b>Week</b>	<b>Content</b>	<b>Number of Periods</b>
7-8	Introductory activity	1
	Counting techniques: Venn diagram, Tree diagrams, Contingency table and Multiplication principles.	4
	Arrangements	3

9	Permutations	2
	Combinations: Definitions and properties	2
10	Pascal's triangles and Binomial expansion	2
	Concepts of probability: Event, Random experiment, Sample space	2
11	Properties and formulas of probability	4
12	Examples of events in real life and determination of related probability	3
	End unit assessment	1
13	<b>EXAMS</b>	