CONTENT DISTRIBUTION

SUBJECT: SUBSIDIARY MATHEMATICS

ASSOCIATE NURSING PROGRAM

Grade: Senior 4 **Number of periods per week:** 3 Periods

Term 1

UNIT 1: SET OF REAL NUMBERS (9 periods)		
Key Unit Competence: Think critically to understand and perform operations on the set of real numbers.		
Week	**Content**	**Number of Periods**
1	Set of real numbers: Real numbers, operations on the set ¡ , Arithmetic of integers and whole numbers.	1
	- Rounding and estimating decimal numbers. - Equivalent fractions, ratios and proportions, and rates.	1
	Absolute value and its properties	1
2	Powers and radicals	1
	Operation on radicals	1
	Decimal logarithms and properties	1
3	Model simple problems about growth and decay, compound interest and magnitude of an earthquake	2
	End unit assessment	1
UNIT 2: FUNDAMENTALS OF TRIGONOMETRY (15 periods)		
Key unit Competence: Use the trigonometric concepts and formulas to solve related problems in Physics, Air navigation, Water navigation, bearings, Surveying and modern medicine.		
Week	**Content**	**Number of Periods**
4	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	1
6	Solving a triangle by cosine law	2
	Solving a triangle by Sine law	1

7-9	Applications trigonometry: Cardiology, Bearing, Air plane directions, Navigation, Inclined plane.	5
	End unit assessment	1

UNIT 3: LINEAR AND QUADRATIC EQUATIONS AND INEQUALITIES (6/12 periods)		
Key unit Competence: Model and solve algebraically or graphically daily life problems using linear, quadratic equations or inequalities.		
Week	**Content**	**Number of Periods**
10	Simple linear equations in one unknown	1
	Products / quotients with linear equations.	1
11	Simple Linear inequalities in one unknown	1
	Products/ quotients form of inequalities.	1
12	Exams	3

Term 2:

UNIT 3: LINEAR AND QUADRATIC EQUATIONS AND INEQUALITIES (6/12 periods)		
Key unit Competence: Model and solve algebraically or graphically daily life problems using linear, quadratic equations or inequalities.		
Week	**Content**	**Number of Periods**
1	Quadratic equations in one unknown	3
2	Simultaneous equations in two unknowns	1
	Solving problems from real life situations involving equations and inequalities	1
	End unit assessment and Remediation	1

UNIT 4: POLYNOMIAL, RATIONAL AND IRRATIONAL FUNCTIONS (12 periods)		
Key Unit Competence: Use concepts and definitions of Polynomial, Rational and Irrational functions to determine the domain of Polynomial, Rational and Irrational functions and represent them graphically.		
Week	**Content**	**Number of Periods**
3	- Definition. - Types of functions (Polynomial, rational, irrational functions) - Injective, surjective and bijective functions, - Existence conditions for a given function.	3
4	Domain of definition and range of a numerical function (Polynomial functions, rational functions, irrational functions).	2
	Factorization and expansion of polynomials	1
5	Parity of a function	1
	Graphical representation of polynomial, rational and irrational functions, their use and interpretation in Economics or Physics .	2

6	Application of polynomial functions in Physics, chemistry and medicine.	2
	End unit Assessment	1

UNIT 5: Limits of Polynomial, Rational and Irrational Functions (9 periods)		
Key Unit Competence: Evaluate correctly limits of functions and apply them to solve related problems		
Week	**Content**	**Number of Periods**
7	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
8	The Squeeze theorem and Operations on limits	1
	Indeterminate cases	2
9	Applications of limits: Continuity of a function , Asymptotes.	2
	End unit Assessment and Remediation	1

UNIT 6: Differentiation of Polynomials, Rational and Irrational Functions and their Applications (9 Periods)		
Key Unit Competence: Use differentiation to solve and interpret problems in various contexts.		
Week	**Content**	**Number of Periods**
10	Concepts of derivative of a function: Definition and Differentiation from first order to high order derivatives	1
	Rules of differentiation	2
11-12	Geometric interpretation of derivatives: Equation of the tangent to a curve, Equation of normal to a curve	1
	Hospital's theorem	1
	Variations of a function	2
	Optimization problems and Rates of change problems	1
	End unit Assessment and Remediation	1
13	Exams	

Term 3:

UNIT 7: VECTORS SPACE OF REAL NUMBERS (6 periods)		
Key Unit Competence: Use concepts of vectors in 2D to solve related problems such as distance, angles,…		
Week	**Content**	**Number of Periods**
1	Introduction to vector in the Euclidian Vector space	1
	Operation of vectors: sum and difference of 2 vectors	1
	Dot product and properties	1
2	Modulus or Magnitude of Vectors	1
	Angle between two vectors	1

	End unit Assessment	1
UNIT 8: MATRICES AND DETERMINANTS OF ORDER 2 (9 Periods)		
Key Unit Competence: Use matrices and determinants of order 2 to solve problems involving the system of 2 linear equations with 2 unknowns.		
Week	**Content**	**Number of Periods**
3	Definition and example of matrices	1
	Addition and subtraction of matrices and Transpose of a matrix	2
4	Multiplication of matrices	1
	Determinant of a matrix of order 2	1
	Inverse of a square matrix	1
5	Applications of matrices in solving daily life problems (physics, buying and selling, medicine).	2
	End unit Assessment and Remediation	1
UNIT 9: MEASURES OF DISPERSION (6 Periods)		
Key Unit Competence: Extend understanding, analysis and interpretation of data arising from problems and questions in daily life to include the standard deviation.		
Week	**Content**	**Number of Periods**
6	Recall on bivariate data and examples	1
	Variance	1
	Standard deviation (including combined set of data) and The Coefficient of variation	1
7	Application of measures of dispersion in nursing and medicine	2
	End unit assessment and Remediation	1
UNIT 10: ELEMENTARY PROBABILITY (18 periods)		
Key Unit Competence: Use combinations and permutations to determine probabilities of occurrence of an event		
Week	**Content**	**Number of Periods**
8	Counting techniques: Venn diagram, Tree diagrams, Contingency table, and Multiplication principles.	2
	Arrangements	1
9	Permutations	2
	Combinations: Definitions and properties	1
10	Pascal's triangles and Binomial expansion	1
	Concepts of probability: Event, Random experiment, Sample space	2
11	Probability of an event A under equally likely assumptions: Definition and formula	2
	Rules or properties of probability	1
12	Determination of probability for different events occurring under equally likely assumptions	1
	Examples of events in medicine and determination of related probability	1
	End unit assessment	1

13	**EXAMS**