CONTENT DISTRIBUTION

SUBJECT: SUBSIDIARY MATHEMATICS

ASSOCIATE NURSING PROGRAM

Grade: Senior **5**   **Number of periods per week:** 3 periods

Term 1:

UNIT 1: Trigonometric Formulae and Equations (15)		
Key unit Competence: Solve trigonometric equations and related real-life problems		
Week	**Content**	**Number of Periods**
1	Recall on trigonometric formulae	1
	Addition and subtraction formulae;	1
	Double angle formulae	1
2	Half-angle formulae	1
	Transformation of product in sum and difference	1
	Transformation of sum in product	1
4	Trigonometric equation reducible to the form $\sin(x+\alpha)=k, \cos(x+\alpha)=k$ and $\tan(x+\alpha)=b$ for $|k| \leq 1$ and $b \in IR$	1
	Trigonometric equation reducible to the form $\sin nx = k$	1
	Trigonometric equation of the form $a\sin x + b\cos x = c$	1
5	**Applications of trigonometry:** Simple harmonic motion in physics, Refraction of light, Medicine	2
	End unit assessment	1
UNIT 2: Sequences (12 periods)		
Key unit Competence: Use arithmetic, geometric, harmonic sequences and their convergence to understand and solve problems arising in various contexts.		
Week	**Content**	**Number of Periods**
6	Definition of sequences	1
	Convergent and divergent sequences	2
7	Arithmetic sequences	3
8	Geometric sequences	3
9	Application of sequences in solving real life problems: Problems including population growth, Problems including compound and simple interests, Half-life and Decay problems in Radioactivity, Bacteria growth problems in Biology …	2
	End unit assessment	1
UNIT 3: Logarithmic and exponential equations (6/15 periods)		
Key Unit Competence: Solve equations involving logarithms or exponentials and apply them to model and solve related problems.		

Week	Content	Number of Periods
10-11	Introduction to Exponential and logarithmic functions	1
	Logarithmic equations including natural logarithms	5
<mark>12</mark>	<mark>Exams</mark>	

<mark>TERM 2:</mark>

UNIT 3: Logarithmic and exponential equations (9/15 periods)

Key Unit Competence: Solve equations involving logarithms or exponentials and apply them to model and solve related problems.

Week	Content	Number of Periods
1	Exponential equations	3
2	Applications of logarithmic and exponential equations in solving real life problems: Interest rates problems, Mortgage problems, Population growth problems, Radioactive decay problems, Earthquake problems, Carbon dating problems, Problems about alcohol and risk of car accident.	5
	Assessment	1

UNIT 4: Trigonometric and inverse trigonometric functions (12 periods)

Key unit Competence: Apply theorems of limits and formulas of derivatives to solve problems involving trigonometric functions.

Week	Content	Number of Periods
3	Introduction on trigonometric functions and their inverses	1
	Domain and range of trigonometric functions	2
4-5	Parity and periodicity of trigonometric functions	2
	Limits of trigonometric functions and their inverses	4
6-7	Differentiation of trigonometric functions	2
	Successive derivatives	1
	Application of trigonometric functions in the periodic motion and medicine.	2
	End unit assessment	1

UNIT 5: Vector space of real numbers (9 periods)

Key Unit Competence: Apply properties of vectors and their operations in $\mathbb{R}^3$ to solve problems related to angles between vectors.

Week	Content	Number of Periods
8	Vector of $\mathbb{R}^3$ and examples (e.g.: gravitational force).	1
	Operations of vectors of $\mathbb{R}^3$ (addition, subtraction, scalar multiplication by a scalar)	2
9-10	Introduction to Euclidian vector space $\mathbb{R}^3$	1
	Scalar or Dot product of two vectors and properties	1

	Magnitude (or norm or length) of a vector	1
	Angle between two vectors	
	Vector product and its properties	1
	Applications of scalar and vector products: Work done by the force, area of a parallelogram.	1
	End unit assessment and Remediation	1

UNIT 6: Matrices and determinants of order 3 (6/18 periods)

Key Unit Competence: Apply matrix and determinant of order 3 to solve related problems

Week	Content	Number of Periods
11	Introduction on square matrices of order 3 : definition and examples	1
	Types of matrices and equality of matrices	2
12	Operations on matrices and properties: addition, subtraction and multiplication	3
13	Exams	3

TERM 3

UNIT 6: Matrices and determinants of order 3 (12/18 periods)

Key Unit Competence: Apply matrix and determinant of order 3 to solve related problems

Week	Content	Number of Periods
1	Transpose of matrix	3
	Multiplication by a scalar	
	Determinants of a matrix of order 3 and properties	3
2	Matrix inverse	3
3	Applications ofdeterminants in solving problems from physics, medicine, or buying and selling	2
	End unit assessment and Remediation	1

UNIT 7: Bivariate statistics (12 periods)

Key Unit Competence: Extend understanding, analysis and interpretation of bivariate data to correlation coefficients and regression lines

Week	Content	Number of Periods
4-5	Introduction to bivariate statistics	2
	Covariance	2
	Regression lines	2
6-7	Coefficient of correlation	3
	Applications: Data analysis, interpretation and prediction problems in various areas (biology, business and medicine)	2
	End unit assessment and remediation	1

UNIT 9: Conditional probability and Bayes theorem (12 Periods)		
Key Unit Competence: Apply Bayes theorem in solving real life problems involving the conditional probability.		
Week	**Content**	**Number of Periods**
8-9	Independent and dependent events	1
	Independent events and multiplication rule	1
	Conditional probability: Probability of event B occurring when event A has already taken place	2
	Basic formulae and properties of conditional probability	2
10	Bayes theorem and its applications	2
	End unit assessment	1
11	**Exams**	**3**