CONTENT DISTRIBUTION

SUBJECT: SUBSIDIARY MATHEMATICS

<mark>ASSOCIATE NURSING PROGRAM</mark>

Grade: Senior **6**   **Number of periods per week:** 3 periods

<mark>Term 1 (33 periods)</mark>

UNIT 1: COMPLEX NUMBERS (27 periods)		
Key unit Competence: Perform operations on complex numbers and solve related problems.		
Week	**Content**	**Number of Periods**
1	Introductory activity on complex number	1
	Definition and properties of "the imaginary number i"	2
2	Geometric representation of complex numbers	2
	Addition and subtraction in the set of complex numbers	1
3	Conjugate of a complex number	1
	Multiplication and powers of complex number	1
	Division in the set of complex numbers	1
4-5	Modulus of a complex number	2
	Square roots of a complex number	2
	Equations in the set of complex number	2
6-7	Definition and properties of a complex number z in polar form	2
	Multiplication and division of complex numbers in polar form	2
	Powers and De Moivre's formula	2
8-9	Definition and properties of a complex number z in exponential form	1
	Euler's formula of complex numbers	2
	Application of complex numbers in other sciences.	1
	End unit assessment	1

UNIT 2: LOGARTHMICS AND EXPONENTIAL FUNCTIONS (6/24 periods)		
Key unit Competence: Extend the concepts of functions to investigate fully logarithmic and exponential functions and use them to model and solve problems about interest rates, population growth or decay, magnitude of earthquake, etc		
Week	**Content**	**Number of Periods**
10	**Introductory activity on Logarithmic functions**	1
	Domain of definition of logarithmic function	2
11	Limits of logarithmic functions	1
	Continuity and asymptote of logarithmic functions	2
12	Exams	

TERM 2

UNIT 2: LOGARTHMICS AND EXPONENTIAL FUNCTIONS (18/24 periods)		
Key unit Competence: Extend the use of concepts and definitions of functions to determine the domain of logarithmic and exponential functions and solve related problems.		
Week	**Content**	**Number of Periods**
1-2	Differentiation of logarithmic functions	2
	Variation of logarithmic function	2
	Domain of definition of exponential function	1
	Limits of exponential functions	1
3	Continuity and asymptote of exponential function	1
	Differentiation of exponential functions	1
	Variation of exponential function	1
4	Interest rates problems	1
	Mortgage problems	1
	Population growth problems	1
5	Radioactive decay problems	1
	Earthquake problems	1
	Carbon dating problems	1

6	Problems about alcohol and risk of car accident	1
	End unit assessment	1
	Remediation	1

UNIT 3: INTEGRATION (18/30 periods)		
Key unit Competence: Use integration as the inverse of differentiation and as the limit of a sum and apply them to find area of plane shapes.		
Week	**Content**	**Number of Periods**
7	Introductory activity on integrals	1
	Differential of a function	1
	Anti-derivatives	1
8-10	Definition and properties of indefinite integral	2
	Basic integration formulae	2
	Integration by change of variable	4
	Assessment	1
11-12	Integration by parts	4
	Application of indefinite integrals	2
13	Exams	

Term 3

UNIT 3: INTEGRATION (12/30 periods)		
Key unit Competence: Use integration as the inverse of differentiation and as the limit of a sum and apply them to find area of plane shapes.		
Week	**Content**	**Number of Periods**
1-2	Application of indefinite integrals (Additional)	2
	Definition and properties of definite integrals	2
	Techniques of integration	2
3-4	Techniques of integration(cont)	2
	Applications of definite integrals: Calculation of the area of a plane surface.	2
	End of unit assessment	1
	Remediation	1
UNIT 3: ORDINARY DIFFERENTIAL EQUATIONS (27 periods)		
Key unit Competence: Use ordinary differential equations of first and second order to model and solve related problems in Physics, Chemistry, Biology and medicine.		
Week	**Content**	**Number of Periods**
5-6	Introductory activity on differential equation	1
	Definitions and classification of differential equations	1

	Differential equations of first order with separable variables	2
	Linear differential equations of first order	2
7	Application of differential equations	1
	Application of differential equations	1
	Application of differential equations	1
8	Application of differential equations	1
	Application of differential equations	1
	Introduction to 2nd order linear homogeneous differential equations	1
9-10	Linear independence and superposition principle	1
	Characteristic equation of a 2nd order differential equations	1
	Solving linear differential equations whose characteristic equation has two distinct real roots	2
	Solving linear differential equations whose characteristic equation has a double real root	
11-12	Solving linear differential equations whose characteristic equation has two complex roots	2
	Applications of differential equations of second order	3
	End unit assessment	1
13	Exams	3