The Camford International School

ANNUAL LESSON PLAN 2024-2025

GRADE : 12   **SUBJECT : MATHEMATICS(041)**

MONTH	CHAPTER NO. AND NAME	DETAIL CONCEPTS TO BE COVERED	PRACTICALS	AIL/AIP
MARCH	5.Continuity	Continuity and differentiability, derivative of composite functions, chain rule, derivatives of inverse trigonometric functions, derivative of implicit functions	ACTIVITY1: To find the valuesof sine and cosine Functions in second ,third and fourth quadrants using given values in first quadrant	
	2.Inverse Trigonometric functions	Definition, range, domain. Principal value branch. Graphs of inverse trigonometric functions.		
APRIL	6.Differentiability	Concept of exponential and logarithmic functions. Derivatives of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Secondorder derivatives.		

	3.Matrices	Concept, notation, order, equality, types of matrices, zero and identity matrix, transpose ofa matrix, symmetric and skew symmetric matrices.		
MAY	1.Relation and functions	Types of relations: reflexive, symmetric, transitiveand equivalence relations. One to one and onto functions.	ACTIVITY2: Vertical and Horizontal line test of functions.	
	3.Matrices	Operation on matrices: Addition and multiplicationand multiplication with a scalar.		
JUNE	4.Determinants	Determinant of a square matrix (up to 3 x 3 matrices), minors, co-factors and applications of determinants in finding the area of a triangle. Solving system of linear equations in two or three variables (having unique solution) using inverse ofa matrix.	ACTIVITY3: $f(x)= x^2 – 8$, To understand derivative as limit of difference quotients.	
	7. Applications of derivatives	Applications of derivatives: rate of change of bodies, increasing/decreasing functions. maxima and minima (first derivative test motivated geometrically and second derivative test given as aprovable tool)	ACTIVITY4: Maxima minima: solved a word problem by the following methods: **a)** Iteration **b)** completion of squares	

JUNE	7. Applications of derivatives.	Simple problems (that illustrate basic principles and understanding of the subject as well as real-life situations).	<u>ACTIVITY5:</u> Maxima minima: solved a word problem by the following methods: a) graphical method b)method of derivatives.	
	Part-II 1. Integrals	Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, Evaluation of simple integrals of the following types and problems based on them.	<u>ACTIVITY6:</u> Sum of squares of first n natural numbers	
	6.Linear Programming	Introduction, related terminology such as constraints, objective function, optimization, different types of linear programming(L.P.) problems. Graphical method of solution for problems in two variables, feasible and infeasible regions(bounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).		

JULY	1. Integrals	Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals. $\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{ax^2 + bx + c}, \int \frac{dx}{\sqrt{ax^2 + bx + c}}$ $\int \frac{px + q}{ax^2 + bx + c} dx, \int \frac{px + q}{\sqrt{ax^2 + bx + c}} dx, \int \sqrt{a^2 \pm x^2}\, dx, \int \sqrt{x^2 - a^2}\, dx$ $\int \sqrt{ax^2 + bx + c}\, dx, \int (px + q)\sqrt{ax^2 + bx + c}\, dx$	<u>ACTIVITY 7:</u> Construction of Parabola	
	2. Applications of Integrals	Applications in finding the area under simple curves, especially lines, circles/parabolas/ellipses(in standard form only).	<u>ACTIVITY 8:</u> Parabola paperfolding activity	
	3. Differential Equations	Definition, order and degree, general and particular solutions of a differential equation. Solution of differential equations by method of separation of variables solutions of homogeneous differential equations of first order and first degree.		

AUGUST	4.Vectors	Definition, Geometrical Interpretation, properties and application of scalar (dot) product of vectors, vector (cross) product of vectors, Vectors and scalars, magnitude and direction of a vector. Direction cosines and direction ratios of a vector. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio.	<u>ACTIVITY 9:</u> Construction of Ellipse <u>ACTIVITY 10:</u> Ellipse paper folding activity	
	3.Differential Equations	Solutions of linear differential equation of the type: dy/dx + py = q, where p and q are functions of x or constants. dx/dy + px = q, where p and q are functions of y or constants.		
SEPTEMBER	5. Three - dimensional Geometry	Direction cosines and direction ratios of a line joining two points. Cartesian equation and vectorequation of a line, coplanar and skew lines, shortest distance between two lines. Cartesian equation and vector equation of a line, coplanar and skew lines, shortest distance between two lines.		
	7. Probability	Conditional probability, multiplication theorem on probability Independent events, total probability, Baye's Theorem. Random variable and its probability distribution, mean of random variable.		**Power Point presentation on Probability of getting Weather reports of Tamilnadu and West Bengal**