



BOKARO PUBLIC SCHOOL

Affiliated to CBSE, New Delhi Upto +2 Level

SEC-3/C, Bokaro Steel City - 827003

SYLLABUS 2025-2026

CLASS: XII

SUBJECT: MATHEMATICS (041)

SUBJECT TEACHER: SAMIM ANSARI

SL. NO	MONTH	WORKING DAY	LESSON STRUCTURE	STATUS
1	APRIL	22	Unit-I: Relations and Functions 1. Relations and Functions Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions. 2. Inverse Trigonometric Functions Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions	
2	MAY	07	Unit-II: Algebra 1. Matrices Concept, notation, order, equality, types of matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Operations on matrices: Addition and multiplication and multiplication with a scalar. Simple properties of addition, multiplication and scalar multiplication. Non- commutativity of multiplication of matrices and existence of nonzero matrices whose product is the zero matrix (restrict to square matrices of order 2). Invertible matrices and proof of the uniqueness of inverse, if it exists; (Here all matrices will have real entries).	
3	JUNE	15	2. Determinants Determinant of a square matrix (up to 3×3 matrices), minors, co-factors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix.	

4	JULY	23	Unit-III: Calculus 1. Continuity and Differentiability Continuity and differentiability, chain rule, derivative of composite functions, derivatives of inverse trigonometric functions like $\sin^{-1} x$, $\cos^{-1} x$ and $\tan^{-1} x$, derivative of implicit functions. Concept of exponential and logarithmic functions. Derivatives of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Second order derivatives. 2. Applications of Derivatives Applications of derivatives: rate of change of quantities, increasing/decreasing functions, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real-life situations).	
5	AUGUST	22	3. 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. $\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{ax^2 + bx + c}, \int \frac{dx}{\sqrt{ax^2 + bx + c}}, \int \frac{px + q}{ax^2 + bx + c} dx,$ $\int \frac{px + q}{\sqrt{ax^2 + bx + c}} dx, \int \sqrt{a^2 \pm x^2} dx, \int \sqrt{x^2 - a^2} dx, \int \sqrt{ax^2 + bx + c} dx$ Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals.	
6	SEPTEMBER	09	4. Application of the Integrals Applications in finding the area under simple curves, especially lines, circles/ parabolas/ellipses (in standard form only)	

7	OCTOBER	12	<p>5. 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. Solutions of linear differential equation of the type:</p> $\frac{dy}{dx} + py = q, \text{ where } p \text{ and } q \text{ are functions of } x \text{ or constants.}$ $\frac{dx}{dy} + px = q, \text{ where } p \text{ and } q \text{ are functions of } y \text{ or constants.}$	
8	NOVEMBER	20	<p>Unit-IV: Vectors and Three-dimensional Geometry</p> <p>1. 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. Definition, Geometrical Interpretation, properties and application of scalar (dot) product of vectors, vector (cross) product of vectors.</p> <p>2. Three-dimensional Geometry Direction cosines and direction ratios of a line joining two points. Cartesian equation and vector equation of a line, skew lines, shortest distance between two lines. Angle between two lines.</p>	
9	DECEMBER	19	<p>Unit-V: Linear Programming Problem</p> <p>1. Linear Programming Introduction, related terminology such as constraints, objective function, optimization, graphical method of solution for problems in two variables, feasible and infeasible regions (bounded or unbounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).</p> <p>Unit-VI: Probability 1. Probability Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem</p>	

10	JANUARY	17	REVISION + PREVIOUS YEAR QUESTIONS + TEST	
11	FEBRUARY		-----	