Cambridge INTERNATIONAL SCHOOL KULLU

Curriculum
Subject: Mathematics (041)
Class: XII
Session: 2024-25

Month	APRIL	MAY	JUNE	JULY
Concepts	**Ch. 3 Matrices** **Ch. 4 Determinants**	**Ch. 1 Relations and functions** **Ch. 2 Inverse Trigonometric Functions**	**Ch. 5 Continuity and Differentiability** **Ch. 6. Applications of Derivatives**	**Ch. 6 Applications of derivatives(contd.)** **Ch. 12 Linear Programming**
Learning Outcomes	**Students will be able to** • Understand the concept, order, notation, equality of Matrices. • Relate to various types of Matrices. • Relate to Transpose of a Matrix and also symmetric and skew-symmetric matrices. • Understand addition, subtraction and multiplication of matrices and their properties. • Relate to invertible matrices and find inverse. • Understand the definition of determinant of a square matrix upto order 3X3. • Relate to Minors, cofactors and its applications. • Understand Adjoint and inverse of a square matrix. • Solve system of linear equations in two or three variables using inverse of a matrix.	**Students will be able to** • Understand the definition of Relations. • Understand the definitions of various types of relations and also equivalence relations. • Apply the definitions in various situations. • Understand the definition of functions and their various types. • Relate to the definition of Inverse of a function and its applications. • Understand the definition of Inverse Trigonometric functions. • Relate to domain, range and principal value branch. • Properties of Inverse Trigonometric functions and their applications.	**Students will be able to** • Understand the concept of continuity. • Relate to derivative of composite functions, chain rule, derivative of inverse trigonometric functions. • Understand derivatives of implicit functions and also of exponential and logarithmic functions. • Understand Logarithmic differentiation and derivatives of functions in parametric form. • Understand the concept of second order derivatives and their applications. • Understand the applications of derivatives as a rate of change and finding intervals of increasing and decreasing functions. .	**Students will be able to** • Understand the applications of derivatives in finding the Maxima and minima for various functions using the first derivative as well as by second derivative test. • Relate to applications of Maxima/Minima in real life situations. • Understand terminology such as constraints, objective function, optimization of a linear programming problem. • Relate to different types of L.P. problems. • Relate to graphical method of solution for problems in two variables, feasible regions (bounded as well as unbounded). • Relate to optimal feasible solutions upto three non-trivial constraints.
Skills	Knowledge/ Understanding/ Application/ Critical Thinking/ Problem Solving	Knowledge/ Understanding/ Critical Thinking/Application	Knowledge/ Understanding/ Application/ Evaluation	Knowledge/ Understanding/ Application/ Critical Thinking/ Problem Solving
Activities	**Competency-skill based activity/Experiential Learning:** To demonstrate a function, which is one-one but not onto (**Lab Manual**)	**Competency-skill based activity/Experiential Learning:** To sketch the graph of a^x and $\log_a x$ where a>0, a≠ *1* and to examine that they are mirror images of each other. **(Lab Manual)**	**Competency-skill based activity/Experiential Learning:** To find analytically the limit of a function f(x) at x = c and also check the continuity of the function at that point. **(Lab Manual)**	**Competency-skill based activity /Experiential Learning:** To verify amongst all the rectangles of the same perimeter, the square has the maximum area. **(Lab Manual)**
Art Integration	Art, English	Art, English, Physics	Art, English, Physics	Art, English, Physics
Assessments	• **Periodic Tests** • **Multiple Assessments** • **Student Enrichment Activities-practical work** **Main Book: NCERT**			

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Month	AUGUST/ SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Concepts	**Ch. 7 Integrals** **Ch. 8 Applications of Integrals**	**Ch. 8 Applications of Integrals (contd.)** **Ch. 9 Differential equations** **Ch. 10 Vectors**	**Ch. 11 Three dimensional Geometry** **Ch. 13 Probability**	**Revision of full syllabus**
Learning Outcomes	**Students will be able to** • Understand integration as an inverse process of differentiation. • Relate to integration of various types of functions using substitution, by partial fractions and by parts and by some more special standards. • Relate to basic properties of definite integrals and also evaluation of definite integrals. • Understand applications in finding the area under simple curves especially lines, parabolas, areas of circles/ellipses. (The region should be easily identifiable).	**Students will be able to** • Understand the definition, order and degree of Differential equations. • Relate to the general and particular solutions of D.E's. • Relate to solutions of various D.E's by method of separating variables and also solutions of homogeneous D.E's and also D.E's of the form $\frac{dy}{dx} + Py = Q$, where P, Q are functions of x and also of the form $\frac{dx}{dy} + Px = Q$. • Understand definition of vectors and scalars, magnitude and direction of a vector. • Relate to direction cosines and direction ratios of a vector. • Understand types of vectors, position vector of a point, negative of a vector, components of a vector, addition of vectors and multiplication of a vector by a scalar. • Relate to position vector of a point dividing a line segment in a given ratio • Understand the definitions and geometrical interpretation of scalar (Dot) product and Vector (Cross) product of vectors along with their properties and applications.	**Students will be able to** • Understand direction cosines and direction ratios of a line joining two points. • Relate to cartesian and vector equations of a line in 3D space. • Relate to the concept of coplanar and skew-lines and the shortest distance between two lines. • Understand the concept of conditional probability. • Relate to multiplication theorem on probability, Independent events, total probability and Baye's Theorem and their applications. • Understand the concept of random variable and its probability distribution and also expectation / mean of the same.	**Students will be able to** • Understand HOTS applications on full syllabus.
Skills	Knowledge/ Understanding/ Application/ Critical Thinking/ Problem Solving	Knowledge/ Understanding/ Application/ Critical Thinking/ Problem Solving	Knowledge/ Understanding/ Application/ Critical Thinking/ Problem Solving	Knowledge/ Understanding/ Application/ Problem Solving/ Critical Thinking
Activities	**Competency-skill based activity/Experiential Learning**: To evaluate the definite integral $\int_a^b \sqrt{1-x^2}$ as the limit of a sum and verify it by actual integration. **(Lab Manual)**	**Competency-skill based activity/Experiential Learning**: To verify geometrically that: $\vec{c}\,\vec{x}(\vec{a}+\vec{b}) = \vec{c}\,\vec{x}\,\vec{a} + \vec{c}\,\vec{x}\,\vec{b}$ **(Lab Manual)**	**Competency-skill based activity/Experiential Learning**: To demonstrate the equation of a plane in normal form. **(Lab Manual)**	**Competency-skill based activity/Experiential Learning**: To explain the computation of conditional probability of a given event A, when event B has already occurred, through an example of throwing a pair of dice. **(Lab Manual)**
Art Integration	Art, English, Physics	Art, English, Physics	Art, English	
Assessments	• **Periodic Tests** • **Multiple Assessment** • **Student Enrichment Activities-practical work** **Main Book: NCERT**			