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

Month	APRIL	MAY	JUNE	JULY
Concepts	**Ch. 1 Sets** **Ch. 2 Relations and functions**	**Ch. 2 Relations and functions(contd.)** **Ch. 3 Trigonometric functions** **Ch. 5 Complex numbers** **Ch. 6 Linear inequalities**	**Ch. 7 Permutations and Combinations** **Ch. 8 Binomial distribution Theorem** **Ch. 9 Sequences and Series**	**Ch. 9 Sequences and series (contd.)** **Ch. 10 Straight lines**
Learning Outcomes	**Students will be able to** ● Relate to sets and their representations, empty sets, finite and infinite sets, equal sets subsets. ● Venn diagrams ● Union and intersection and difference of sets. ● Complement of a set and properties of complement ● Relate to ordered pairs, Cartesian product of sets, number of elements in the Cartesian product of two finite sets. ● Definition of Relation, pictorial diagrams, domain, co-domain and range of a relation. ● Real valued functions, domain and range of these functions with their graphs ● Angles in radians and degrees. Domain and range of trigonometric functions with their graphs.	**Students will be able to** ● Relate to applications of various identities like sin (x+y), sin(x-y), cos (x+y), and cos (x-y) etc. ● Also applications on identities like sin x + sin y, sin x - sin y, cos x + cos y, cos x - cos y. ● Identities related to sin 2x, cos 2x, tan 2x etc. ● Relate to the need of complex numbers. Solving quadratic equations with complex roots. ● Square root of -1 as i. Algebraic properties of complex numbers. Argand plane. ● Relate to the concept of linear inequalities. ● Algebraic solutions of linear inequalities in one variable and their representation on the number line.	**Students will be able to** ● Relate to the fundamental principle of counting. ● Concept of Permutations and combinations. Formula for them and their applications. ● Relate to the concept of the Binomial distribution theorem and its formula. ● Pascals triangle. ● Simple applications on the Binomial expansion. ● Simple applications on the general term of a binomial expansion.	**Students will be able to** ● Relate to the concept of Sequences and series. ● Arithmetic progression (A.P) and arithmetic mean (A.M.) ● Geometric progression (G.P.) and Geometric mean (G.M.) ● General term of a G.P., sum of n terms of G.P., infinite G.P. and its sum. ● Relation between A.M. and G.M. ● Relate to a brief recall of 2D-geometry from earlier classes. ● Slope of a line and angle between two lines. ● Various forms of equation of a line: parallel to x-axis, point slope form, slope intercept form, two point form and intercept form. ● Distance of a point from a line.
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 verify that for two sets A and B, n(AxB)=pq and the total number of relations from A to B is 2^{pq}, where n(A)=p and n(B)=q. **(Lab Manual)**	**Competency-skill based activity/ Experiential Learning:** To verify that the graph of a given inequality, say 5x + 4y - 40 < 0, of the form ax + by + c < 0, a, b > 0, c < 0 represents only one of the two half - planes. **(Lab Manual)**	**Competency-skill based activity/ Experiential Learning:** 1. To find the number of ways in which three cards can be selected from five cards. 2. To construct a Pascal's Triangle and to write binomial expansion for a given positive integral exponent. **(Lab Manual)**	**Competency-skill based activity / Experiential Learning:** To demonstrate that the Arithmetic mean of two different numbers is always greater than their Geometric mean. **(Lab Manual)**
Art Integration	Art, English	Art, English, Physics	Art, English	Art, English
Assessment	● **Periodic Tests** ● **Multiple Assessments** ● **Student Enrichment Activities-practical work** **Main Book: NCERT**			

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Month	AUGUST/ SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Concepts	**Ch. 11 Conic sections** **Ch. 12 Three dimensional geometry**	**Ch. 13 Limits and Derivatives** **Ch. 15 Statistics**	**Ch. 16 Probability**	**Revision of the full syllabus**
Learning Outcomes	**Students will be able to** ● Relate to sections of a cone: circles, parabola, ellipse, hyperbola, a point, a straight line and a pair of intersecting lines. ● Standard equations and simple properties of parabola, ellipse and hyperbola. ● Standard equation of a circle. ● Relate to the coordinate axes and coordinate planes in three dimensions. ● Coordinates of a point. ● Distance between two points.	**Students will be able to** ● Relate to the intuitive idea of limit. ● Limits of polynomials and rational functions, trigonometric, exponential and logarithmic functions. ● Definition of derivative and also introduce derivative as a rate of change. Also relate the concept of derivative to the slope of a tangent to a point on a curve. ● Derivative of sum, difference, product and quotient of functions. ● Derivatives of polynomial and trigonometric functions. ● Relate to the concept of measures of dispersion: Range, mean deviation, variance and standard deviation of grouped / ungrouped data.	**Students will be able to** ● Relate to the concept of Events, occurrence of events, 'not', 'and' and 'or' events, exhaustive events and mutually exclusive events. ● Relate to the Axiomatic probability with connections with other theories of earlier classes. ● Probability of an event. ● Probability of 'not', 'and' and 'or' events.	**Students will be able to** ● Understand HOTS applications on various chapters of the syllabus and also revision of NCERT chapters.
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 construct a parabola. **(Lab Manual)**	**Competency-skill based activity/Experiential Learning**: **To find $\lim_{x\to 0} f(x)$ when $f(x) = \frac{x^2-c^2}{x-c}$** **(Lab Manual)**	**Competency-skill based activity/Experiential Learning**: 1. To write the sample space, when a die is rolled once, twice, … 2. To write the sample space, when a coin is tossed once, twice, three times, four times. **(Lab Manual)**	
Art Integration	Art, English, Physics	Art, English, Physics	Art, English	
Assessment	● **Periodic Tests** ● **Multiple Assessment** ● **Student Enrichment Activities-practical work** **Main Book: NCERT**			