

Curriculum
Session – 2022-23
Subject- Mathematics
Class – XI
Subject code: 041

| Month | MAY/JUNE | JULY | AUGUST/SEPTEMBER | OCTOBER |
|--------------------------|--|---|--|---|
| Concepts | Ch. 1 Sets Ch. 2 Relations and functions Ch. 3 Trigonometric functions | 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. 10 Straight lines |
| Learning Outcomes | <p>Students will be able to</p> <ul style="list-style-type: none"> 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. | <p>Students will be able to</p> <ul style="list-style-type: none"> 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. | <p>Students will be able to</p> <ul style="list-style-type: none"> Relate to the fundamental principle of counting. Factorial n. 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. | <p>Students will be able to</p> <ul style="list-style-type: none"> 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 | <p>Competency-skill based activity/Experiential Learning: To verify that for two sets A and B, $n(A \times B) = pq$ and the total number of relations from A to B is 2^{pq}, where $n(A) = p$ and $n(B) = q$. (Lab Manual)</p> | <p>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)</p> | <p>Competency-skill based activity/Experiential Learning:</p> <ol style="list-style-type: none"> To find the number of ways in which three cards can be selected from five cards. To construct a Pascal's Triangle and to write binomial expansion for a given positive integral exponent. <p>(Lab Manual)</p> | <p>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)</p> |
| Assessment | <ul style="list-style-type: none"> Periodic Tests Multiple Assessments Student Enrichment Activities-practical work <p>Main Book: NCERT</p> | | | |

Curriculum
Session – 2022-23
Subject- Mathematics
Class – XII
Subject code: 041

| Month | NOVEMBER | DECEMBER | JANUARY/FEBRUARY | FEBRUARY |
|-------------------|--|--|---|---|
| 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 | <p>Students will be able to</p> <ul style="list-style-type: none"> 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. | <p>Students will be able to</p> <ul style="list-style-type: none"> 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. | <p>Students will be able to</p> <ul style="list-style-type: none"> 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. | <p>Students will be able to</p> <ul style="list-style-type: none"> 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 | <p>Competency-skill based activity/Experiential Learning: To construct a parabola. (Lab Manual)</p> | <p>Competency-skill based activity/Experiential Learning: To find $\frac{d}{dx} \left(\frac{a^x}{x} \right) = \frac{a^x \ln a - 1}{x^2}$ (Lab Manual)</p> | <p>Competency-skill based activity/Experiential Learning:</p> <ol style="list-style-type: none"> To write the sample space, when a die is rolled once, twice, ... To write the sample space, when a coin is tossed once, twice, three times, four times. <p>(Lab Manual)</p> | <p>Competency-skill based activity/Experiential Learning: (Lab Manual)</p> |
| Assessment | <ul style="list-style-type: none"> Periodic Tests Multiple Assessment Student Enrichment Activities-practical work <p>Main Book: NCERT</p> | | | |