

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

Month	MARCH/APRIL	MAY	JUNE	JULY/AUGUST
Concepts	Ch. 1 Relations and functions Ch. 2 Inverse Trigonometric Functions	Ch. 3 Matrices Ch. 4 Determinants	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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 $\log x^a$ where $a > 0, a \neq 1$ 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)
Assessments	<ul style="list-style-type: none"> Periodic Tests Multiple Assessments Student Enrichment Activities-practical work <p style="text-align: center;">Main Book: NCERT</p>			

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Month	AUGUST/SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Concepts	Ch. 7 Integrals Ch. 8 Applications Of Integrals	Ch. 9 Differential equations Ch. 10 Vectors	Ch. 11 Three dimensional Geometry Ch. 13 Probability	Revision of Term 2 chapters
Learning Outcomes	<p>Students will be able to</p> <ul style="list-style-type: none"> 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) 	<p>Students will be able to</p> <ul style="list-style-type: none"> 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 $dx/dy + Px = Q$. 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. 	<p>Students will be able to</p> <ul style="list-style-type: none"> 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 cartesian and vector equation of a plane Relate to the distance of a point from a plane Understand the concept of conditional probability Relate to multiplication theorem on probability, Independent events, total probability and Bayes theorem and their applications Understand the concept of random variable and its probability distribution and also expectation / mean of the same. 	<p>Students will be able to</p> <ul style="list-style-type: none"> Understand HOTS applications on various chapters of term 2
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
Acitvites	<p>Competency-skill based activity/Experiential Learning: To evaluate the definite integral $\int_a^b \sqrt{1-x^2} dx$ as the limit of a sum and verify it by actual integration. (Lab Manual)</p>	<p>Competency-skill based activity/Experiential Learning: To verify geometrically that: $\vec{c} \times (\vec{a} + \vec{b}) = \vec{c} \times \vec{a} + \vec{c} \times \vec{b}$. (Lab Manual)</p>	<p>Competency-skill based activity/Experiential Learning: To demonstrate the equation of a plane in normal form. (Lab Manual)</p>	<p>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)</p>
Assessments	<ul style="list-style-type: none"> Periodic Tests Multiple Assessment Student Enrichment Activities-practical work <p>Main Book: NCERT</p>			