MATHEMATICS:

Course Outcomes:

Sem	Paper Code	Paper Name	Course outcomes	
Sem-I	MATDSCT 1.1	Algebra-I & Calculus-I	**CO:1**	Learn to solve system of linear equations. Solve the system of homogeneous and non-homogeneous system of **m**-equations in **n**-variables by using concept of rank of matrix.
			CO:2	Sketch curves in Cartesian, Polar and Pedal equations.
			CO:3	Identify and apply the intermediate value theorems and L-Hospital rule.
			CO:4	Students will be familiar with the techniques of n^{th}-differentiation of standard functions with real variables.
Sem-II	MATDSCT 2.1	Algebra-II & Calculus-II	**CO:1**	Understanding the basic concept of Real number system.
			CO:2	Link the fundamental concept of groups, symmetries of geometrical objects, notions of closets, normal subgroups, factor group and Euler's theorem.
			CO:3	Find the extreme values of functions of two variables.
			CO:4	Students will come to know about application of integration in finding Areas and Volumes of some solids.
Sem-III	MATDSCT 3.1	Ordinary Differential Equations & Real Analysis-I	**CO:1**	Solve First order linear & nonlinear differential equations. Orthogonal trajectories of Cartesian and Polar curves.
			CO:2	Solve linear differential equations of nth-order with constant as well as variable coefficients.
			CO:3	Understand the concept of Sequences, Limits of Sequences, A Discussion about Proofs, Limit Theorems for Sequences, Monotone Sequences , Cauchy Sequences and earns Problem solving procedure
			CO:4	Understand the concept of Subsequences, Lim sup and Lim. Understanding the concept of De-Alembert's Ratio test, Cauchys Root test , P-series, Alternating series, Limit comparison tests for Convergence and absolute convergence of an infinite series.
Sem-IV	MATDSCT 4.1	Partial Differential Equations & Integral transforms	**CO:1**	Solve the Partial Differential Equations of I & II order, Linear & non Linear Partial Differential Equations by using different methods & applying these methods to solve some physical problem.
			CO:2	Solve Homogeneous Linear Partial Differential Equations with constant coefficients. Solutions of Hyperbolic, Parabolic, Elliptic, Heat equations, Wave equations & Laplace equations using separations of variables.
			CO:3	Solve Partial Differential Equations by using Laplace Transforms.
			CO:4	Solve Partial Differential Equations by using Fourier Transforms.

Sem-V	BMSEC5C	Linear Algebra (SEC)	**CO**	Understand the combination of two important aspects of modern mathematics via Linear Algebra. Linear Algebra emphasizes the concept of vector spaces and linear transformations which are essential in simplifying various scientific problems.
Sem-V	BMDSE5CT	Numerical Analysis (DSE)	**CO:1** **CO:2** **CO:3** **CO:4**	Understand the concept of Number Theory Systems, Errors, Numerical methods, such as Bisection, False Position, Newton Raphson & Secant methods. To solve System of Equations by using Gauss-Elimination, Gauss-Jacobi's & Gauss-Seidal methods. Students will learn the concepts of Finite Difference methods of Forward & Backward Differences and Shifting operator, relation between Forward, Backward & Shifting Operator. Students will learn the concepts of Interpolation with Equal and Unequal Intervals such as Newton Gregory Forward & Backward Interpolation formula, Newton's Divided Difference, Lagrange's Interpolation & Inverse Interpolation.
Sem-V	BMSEC5B	Laplace Transform (SEC)	**CO**	To solve Ordinary Differential Equations & Standard Integrals by using Laplace Transform.
Sem-V		Graph Theory-I	**CO:1** **CO:2** **CO:3** **CO:4**	To understand meaning and concept of graphs, different types of graphs, and minimum and maximum degree of graphs. To understand sub graphs, shortest path problems and charactization of bipartite graphs. To understand Matrix representation of graphs and vertex and edge connectivity. Understanding the concept of Trees and some different types of trees and there properties.
Sem-VI	BMSEC6B	Fourier Series & Fouries Transforms (SEC)	**CO**	To solve Partial Differential Equations & Standard Integrals by using Fourier Transform.
Sem-VI	BMSEC6D	Vector Calculus (SEC)	**CO**	Applications of line & double integrals, students obtain knowledge on how to find areas and surfaces with the use of integrals. Students learn how to find the volume of a solid region by using Green's Theorem, Gauss Divergence Theorem & stokes Theorem.

Sem-VI	BMDSE6CT	Numerical Analysis-II	**CO:1** **CO:2** **CO:3** **CO:4**	To solve Numerical Differentiation by using Newton Gregory Forward & Backward Interpolation Formula. To solve Trapezoidal rule, Simpson's $1/3^{rd}$, Simpson's $3/8^{th}$ and Weddle's rule by using General Quadrature formula. To solve Initial Value Problems by using Picard's method, Taylor's Series method, Euler's method & Runge-Kutta II & IV order method. To solve Boundary Value Problems by using Adam's-Bashforth & Milne's Predictor & Corrector formula, Finite Difference method & Shooting method.
Sem-VI		Graph Theory-II	**CO:1** **CO:2** **CO:3** **CO:4**	To understand Eulerian, Hamiltonian graphs and some applications of graphs in electric networks. To understand the theory of Planar graphs, its characterization and Crossing numbers with examples. To know coloring of a graph, chromatic numbers of some familiar graphs. To understand meaning & kinds of Digraphs along with strong and weak Digraphs.