Department of Mathematics
Programme Specific Outcomes (PSO): B.Sc. (Mathematics)

After successful completion of 3 year degree program in Mathematics students should be able to ;

PSO-1	Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study
PSO-2	A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning.
PSO-3	Ability to analyze a problem, identify and define the computing requirements, which may be appropriate to its solution.
PSO-4	Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.
PSO-5	Ability to pursue advanced studies and research in pure and applied mathematical science.

Course Outcomes: Department of Mathematics			
Class and Duration	**Course**	**Course Outcomes**	
B.Sc. I (CBCS (NEP)) (2022-2023)	Paper I (Calculus)	CO-1	Evaluate the limit & examine the continuity of a function at a point.
		CO-2	Understand the consequences of mean value theorems for differentiable functions.
		CO-3	Apply Leibnitz's theorem to obtain higher order derivatives of product of two differentiable functions.
	Paper II (Differential Equations)	CO-1	Understand types of differential equations.
		CO-2	Solve different types of ordinary differential equations.
		CO-3	Understand applications of differential equations.
	Paper III (Multivariable Calculus)	CO-1	Learn conceptual variations while advancing from one variable to several variables in calculus.
		CO-2	Set up and solve optimization problems involving several variables.
		CO-3	Learn the concept of Jacobian of a transformation.
	Paper IV (Basic Algebra)	CO-1	Use of fundamental concepts in Mathematics like sets, relations & functions.
		CO-2	Use of fundamental concepts in Number theory.
		CO-3	Understand the concept of congruence & to solve examples on it.
		CO-4	Understand the applications of De Moivre's theorem & various properties of hyperbolic functions.
	CML- I	CO-1	Problem solving on Curve tracing, calculus.
		CO-2	Applications of differential equations and plotting 2D & 3D curves using any open-source software.

Course Outcomes: Department of Mathematics

Class and Duration	Course	Course Outcomes	
B.Sc. II (CBCS (NEP)) 2023-24	Paper V (Elements of Differential Equations)	CO-1	Student will be identifying types of higher order ordinary differential equations.
		CO-2	Finding Jacobian and extreme values of functions of two and three variables.
	Paper VI (Numerical Methods)	CO-1	Find numerical solutions of algebraic, transcendental and system of linear equations.
		CO-2	Learn about various interpolating methods to find numerical solutions.
		CO-3	Find numerical solutions of integration and ODE by using various methods.
		CO-4	Apply various numerical methods in real life problems.
	Paper VII (Vector Calculus)	CO-1	Understand and evaluate the concepts of gradient, divergence and curl of point functions in terms of cartesian co-ordinate system.
		CO-2	Understand and evaluate different types of line, surface & volume integrals and the two integral transformation theorems of Gauss and Stoke.
	Paper VIII (Integral Calculus)	CO-1	Learn special functions like Gamma function, Beta function, Error function etc.
		CO-2	Learn the concept of Multiple integral, how to find area, volume etc.
		CO-3	Apply special functions in applications & in real life problems
	CML-II & III	CO-1	Problem solving on differential equations and numerical methods.
		CO-2	Learn Scilab software, Writing of various program in Scilab and run it on computer

Course Outcomes: Department of Mathematics		
Class and	**Course**	**Course Outcomes**

Duration			
B.Sc. III CBCS with Multiple Entry & Multiple Option (NEP-2020) 2024-2025	Paper IX DSC-E9 (Real Analysis)	CO-1	Students understand basic facts about functions and countability of sets.
		CO-2	Learn bounded, convergent, divergent, Cauchy and monotonic sequences.
		CO-3	Students understand to calculate limit superior. Limit inferior and the limit (when exist) of a sequence.
		CO-4	Use of different tests for convergence and absolute convergence of an infinite series of real numbers.
	Paper X DSC-E10 (Modern Algebra)	CO-1	Learn group structure and its properties.
		CO-2	Learn ring structure and its properties.
		CO-3	Understand the difference between concepts of group & ring.
		CO-4	Understand fundamental theorems of homomorphism, isomorphism for group and ring.
	Paper XI DSC-E11 (Partial Differential Equations)	CO-1	Understand the basic concepts of partial differential equations & their classification.
		CO-2	Analyze and solve linear and some nonlinear partial differential equations using analytical methods.
		CO-3	Apply critical thinking skills to select appropriate solution methods for different types of PDEs.
		CO-4	Abel to apply various solution techniques to solve linear partial differential equations of both first and second order.
	Paper XII DSC-E12 (Integral Transform)	CO-1	Understand the meaning of Laplace Transform.
		CO-2	Apply properties of L. T. to solve differential equations.
		CO-3	Understand relation between Laplace and Fourier transform.
		CO-4	Understand infinite and finite Fourier transform.
	Paper- XIII DSE-F9 (Metric Spaces)	CO-1	Acquire the knowledge of notion of metric space, open sets and closed sets.
		CO-2	Demonstrate the properties of continuous functions on metric spaces.
		CO-3	Apply the notion of metric space to continuous functions on metric spaces.
		CO-4	Understand the basic concepts of connectedness, completeness and compactness of metric spaces.

	Paper- XIV DSE-F10 (Linear Algebra)	CO-1	Understand the fundamental concepts in linear algebra, enabling them to analyze and manipulate vector spaces, linear transformations.
		CO-2	Relate matrices and linear transformations.
		CO-3	Acquire skills to perform computations related to inner product and orthogonalization techniques.
		CO-4	Compute Eigen values and Eigen Vectors of a linear transformation.
	Paper- XV DSE-F11 (Complex Analysis)	CO-1	Learn basic concepts of functions of complex variable and analytic function.
		CO-2	Understand concept of complex integration and results related to it.
		CO-3	Understand the concepts of sequence and series of complex variable.
		CO-4	Learn to apply concepts of residues to evaluate certain real integrals.
	Paper- XVI DSE-F12 (Optimization Techniques)	CO-1	Understand the fundamental concepts of Operations Research (O. R.)
		CO-2	Identify and develop operations research model describing a real-life problem.
		CO-3	Understand the mathematical tools that are needed to solve various optimization problems.
		CO-4	Solve various linear programing, transportation, assignment problems related to real life.
	CCPM-IV	CO-1	Solve the problems on L.P.P.
		CO-2	Solve the problems on T. P. & A. P.
	CCPM-V	CO-1	To solve the problems on Laplace transform
		CO-2	To solve the problems on Fourier transform
	CCPM-VI	CO-1	Learn “PYTHON” software,
		CO-2	Writing of various program in “PYTHON” and run it on computer
	CCPM-VII	CO-1	Student is expected to read, collect, understand the culture of Mathematics, its historic development and to prepare the Project.
		CO-2	Student must visit at least renown academic institution so that visiting student will be inspired to go for higher studies in Mathematics.
		CO-3	Student should present a seminar before the B. Sc. III class on some topic in Mathematics.

Head
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