Postgraduate Department of Mathematics

B.Sc. Mathematics

Programme Outcomes

PO1	Acquire the sense of Mathematical, Logical and Analytical thinking
PO2	Understand the basics of Mathematical concepts and area of applications.
PO3	Generate interest for higher education and academic contribution
PO4	Develop soft skills for Research, Employment and Entrepreneurship.
PO5	Ignite scientific temper and be aware of possible contributions.
PO6	Create awareness on environmental issues and human rights
PO7	Become intellectually competent and to become a human being committed to development of society

Programme Specific Outcomes

PSO1	Apply the basic concepts and techniques of logic, set theory and calculus in other areas of Mathematics.
PSO2	Apply Mathematics in real life situations and solve the problems logically.
PSO3	Analyze abstract structures which are relevant in other disciplines of Mathematics, Theory of Equations, Geometry, Number Theory and Logic.
PSO4	Develop analytic brain, logical thinking and problem solving skills through Mathematical Analysis.
PSO5	Understand Mathematics of nature and create a positive attitude about the environment. Awareness of the basic ideas of Human Rights.
PSO6	Create aptitude in higher studies and research.

Course Outcomes

Core Courses for B.Sc. Mathematics

Sl. No	Course Code	Course Title	Course Outcomes		
SEM	ESTER 1				
			CO1	Analyze and evaluate real world arguments and problems using propositional logic	
		Foundations	CO2	Create new sets and perform set operations to model and solve practical problems.	
1	MM1CRT01	of Mathematics	CO3	Apply knowledge of equivalence relations to solve problems involving equivalence classes and partitions.	
			CO4	Apply relations connecting roots and coefficients to solve equations and derive useful information about their properties.	
SEM	SEMESTER 2				
	MM2CRT01	Analytic Geometry, Trigonometry and Differential Calculus	CO1	Evaluate the properties of conic sections	
			CO2	Understand polar equations of conic sections	
2			CO3	Apply the concept of separation into real and imaginary parts for circular and hyperbolic functions of a complex variable	
			CO4	Evaluate higher order derivatives of the product of two functions and limits of indeterminate forms	
SEM	ESTER 3				
			CO1	Apply the concepts of differentiation.	
			CO2	Apply the concepts of partial derivatives .	

3	MM3CRT01	Calculus		Apply integrals to find the volumes of solids, the
5	MUSCRIOI		CO3	length of an arc and the area of surfaces of
				revolution.
				Apply double and triple integrals to find the area
			CO4	and volume.
SEN	AESTER 4	·		
			CO1	Analyze differentiable vector valued functions and properties
	MM4CRT01	Vector Calculus		Evaluate line integrals and surface integrals and
	WINT TERT OF	Theory of	CO2	apply related theorems
		Numbers		Apply the properties of congruence relation and
		and Laplace	CO3	understand Phi-function
			CO1	Apply Laplace transforms for solving differential
			04	equations
SEMESTER 5				
				Understand the algebraic and order properties of Real
			CO1	numbers, the absolute value of a real number and the
	MM5CRT01	Mathematical Analysis		Completeness Property of R
			CO2	Analyze the convergence and divergence of
				sequences and identify patterns in their limits.
5				Apply the various types of tests to determine the
			CO3	convergence and divergence of infinite series in
				Mathematical problems.
				Analyze the behavior of functions using limit
			CO4	theorems and determine how they affect the limits of
				functions.
				Apply integrating factors for reducing differential
		Differential Equations	CO1	equations into an exact form and hence solve.
6	MM5CRT02		CO2	Evaluate the complementary function and particular
0				integrals of linear differential equations.
			CO3	Analyze the orthogonal trajectory of the system of

				curves.		
			CO4	Apply various methods of solutions of Differential		
				Equations $dx/P = dy/Q = dz/R$		
			CO1	Understand different algebraic structures.		
				Construct new algebraic structures and		
			CO2	substructures.		
		Abstract		Analyze concepts of Homomorphism, Isomorphism		
7	MM5CRT03	Algebra	CO3	and automorphism.		
			CO4	Apply theorems related to algebraic structures.		
			CO1	Analyze the use and over-exploitation of natural resources.		
	MM5CRT04	Human Rights and Mathematics for Environmental Studies	CO2	Analyze the role of individuals in preventing Environmental Pollution and Social Issues.		
8			CO3	Analyze types of Fibonacci and Lucas numbers in nature.		
			CO4	Understand the concept of golden ratio, the mean proportional and its geometric interpretation.		
			CO5	Evaluate the importance of human rights awareness in education.		
SEN	SEMESTER 6					
			CO1	Analyze the behavior of continuous functions, andd		
9		M6CRT01 Real Analysis		identifying points of continuity and discontinuity.		
				Analyze functions and intervals where the Mean		
	MM6CRT01		CO2	Value Theorem is applicable and apply L' Hospital's		
				rules.		
			CO3	Understand the Riemann Integral and Riemann		
				Integrable Functions		

				Understand the concept of sequence and series of		
			CO4	functions.		
				Apply concepts graph theory and matrix		
			CO1	representation of graphs.		
10		Graph Theory and Metric	CO2	Analyze the properties of trees, Euler graphs, and Hamiltonian graphs.		
10	MM6CRT02	Spaces	CO3	Analyze convergence in metric spaces		
			CO4	Understand the completeness concept and evaluate continuity of functions in metric spaces.		
			CO1	Evaluate analytic and harmonic functions.		
			CO2	Apply the theory and techniques of complex		
11	MM6CRT03	Complex	02	integration.		
		Analysis	CO3	Apply power series expansion of analytic functions.		
				Apply the theory of residues in complex integration		
			CO4	and evaluation of definite integrals.		
	MM6CRT04	Linear Algebra	CO1	Apply concepts of matrices to solve linear equations.		
			CO2	Evaluate properties of vector spaces		
12			CO3	Apply concepts of Linear transformations and Linear		
				isomorphism.		
			CO4	Analyze concepts of algebraic and geometric		
				multiplicity.		
Ch	Choice Based Core Course (Semester 6)					
		3T01 Operations Research	CO1	Evaluate real-life problems using various linear programming methods.		
			CO2	Analyze the concept of duality in LPP.		
1	MM6CBT01		CO3	Analyze the transportation and assignment problems using algorithms.		
			CO4	Evaluate real life situations using different methods		

				of two person zero sum game.		
Op	Open Course (Semester 5)					
1	MM5GET02	Applicable Mathematics	CO1	Apply the formulas on interest computing, time and work, work and wages, time and distance.		
			CO2	Apply the basic concepts of trigonometry, exponential and logarithmic series		
			CO3	Apply elementary mensuration of solids and elementary concepts of algebra		
			CO4	Understand the basic concepts of differential calculus and basic formulas		

Complementary Courses (to B.Sc. Physics/Chemistry)

SEN	SEMESTER 1					
			CO1	Apply differentiation to functions of several		
	MM1CMT01	Partial Differentiation Matrices, Trigonometry and Numerical Methods CO4		variables.		
			CO2	Apply matrix theory to find the solution of a system		
				of linear equations and spectrum of matrices.		
1			CO3	Apply trigonometry for summation of infinite series		
				and separation of complex functions.		
			CO. I	Apply numerical methods for solution of higher		
			04	order equations		
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SEN	SEMESTER 2				
	MM2CMT01	Integral Calculus and Differential Equations	CO1	Apply tools of integration to find volume of solid of revolution, arc length and area of surface of revolution	
2			CO2	Evaluate area of a bounded region in plane and volume of a closed bounded region in space.	
			CO3	Apply various methods to solve Ordinary Differential Equations.	
			CO4	Apply Lagrange's method to solve first order linear Partial Differential Equations.	
SEN	SEMESTER 3				
			CO1	Analyze differentiable vector valued functions and properties	
3	MM3CMT01	ATTO1 Vector Calculus, Analytic Geometry and Abstract Algebra	CO2	Evaluate line integrals and surface integrals and apply related theorems	
			CO3	Apply the concepts related to Conic sections	
			CO4	Understand Groups, Subgroups, Cyclic groups and Homomorphism	
SEN	AESTER 4				
	MM4CMT01	Fourier Series, Laplace Transform and Complex Analysis	CO1	Apply Fourier series and Legendre polynomials in solving Mathematical problems.	
4			CO2	Apply Power series method and Laplace transforms to solve differential equations	
			CO3	Analyze the concept of analytic and harmonic functions.	
			CO4	Understanding the theory and techniques of complex integration	

ComplementaryCourses in Statistics (to B.Sc. Mathematics)

SEMESTER 1

			CO1	Analyze the concept of data	
			CO2	Understand the basic concepts of measures of central	
				tendency and dispersion	
			CO3	Analyze different data sets based on their skewness	
1	ST1CMT01	Descriptive		and kurtosis	
		Statistics		Apply index numbers in various economic contexts	
			CO4	for identifying economic fluctuations	
SEN	AESTER 2	1			
			CO1	Apply probability concepts for solving real world	
				problems	
2	ST2CMT01	Duchability	CO2	Remember different types of random variables	
_	212011101	Theory	CO2	Apply various measures associated with random	
			CO3	variables	
			<i></i>	Analyze the relationship between two data sets using	
			CO4	correlation and regression techniques	
SEMESTER 3					
			001	Apply the proficiency in using mathematical	
3	ST3CMT01	Probability	COI	techniques related to Mathematical Expectations	
5	51001101	Distributions	CO2	Analyze different probability distributions	
			CO3	Evaluate different implications of Law of Large	
				Numbers in statistical scenarios	
			CO4	Remember various Sampling Distributions	
SEN	MESTER 4				
				Understand different methods of parameter	
		CMT01 Statistical	CO1	estimation and their properties	
			CO2	Create confidence intervals for parameters	
			CO3	Create hypotheses and conduct different tests	
4 ST4CMT01	ST4CMT01		CO4	Apply the knowledge of statistical inference for	
				drawing conclusions from real - world problems	
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