

I – Academic Planner

A. Teaching Plan (Year: 2019-20) Semester: Odd / Even)

Teacher's Name: Dr. PREETI GARG

Department: MATHEMATICS

S. No.	UPC	Paper Name	Core/AECC/G E/SEC	Topic/Unit	Start Date	End Date
1.	32351102	BMATH102: Algebra	CORE B.Sc.(H) Mathematics I Sem. (CBCS-LOCF)	Unit 1: Theory of Equations and Complex Numbers Polynomials, The remainder and factor theorem, Synthetic division, Factored form of a polynomial, Fundamental theorem of algebra, Relations between the roots and the coefficients of polynomial equations, Theorems on imaginary, integral and rational roots; Polar representation of complex numbers, De Moivre's theorem for integer and rational indices and their applications. The nth roots of unity.	20.07.2019	16.08.2019
				Unit 2: Equivalence Relations and Functions Equivalence relations, Functions, Composition of functions, Invertibility and inverse of functions, One-to-one correspondence and the cardinality of a set.	17.08.2019	31.08.2019
				Unit 3: Basic Number Theory Well ordering principle, The division algorithm in \mathbb{Z} , Divisibility and the Euclidean algorithm, Fundamental theorem of arithmetic, Modular arithmetic and basic properties of congruences; Principle of mathematical induction.	1.09.2019	16.09.2019

				Unit 4: Row Echelon Form of Matrices and Applications. Systems of linear equations, Row reduction and echelon forms, Vector equations, The matrix equation $Ax = b$, Solution sets of linear systems, The inverse of a matrix; Subspaces, Linear independence, Basis and dimension, The rank of a matrix and applications	17.09.2019	6.10.2019
				Unit 4 continued: Introduction to linear transformations, The matrix of a linear transformation; Applications to computer graphics, Eigenvalues and eigenvectors, The characteristic equation and Cayley Hamilton theorem.	14.10.2019	15.11.2019
2.	32351502	Group Theory-II	Core B.Sc. (H) Mathematics V Sem. (CBCS)	Automorphism, inner automorphism, automorphism groups, automorphism groups of finite and infinite cyclic groups, applications of factor groups to automorphism groups, Characteristic subgroups, Commutator subgroup and its properties.	20.07.2019	17.08.2019
				Properties of external direct products, the group of units modulo n as an external direct product, internal direct products, Fundamental Theorem of finite abelian groups.	18.08.2019	14.09.2019
				Group actions, stabilizers and kernels, permutation representation associated with a given group action, Applications of group actions: Generalized Cayley's theorem, Index theorem. Groups acting on themselves by conjugation, class equation and consequences	15.09.2019	6.10.2019
				conjugacy in S_n , p -groups, Sylow's theorems and consequences, Cauchy's theorem, Simplicity of A_n for $n \geq 5$, non-simplicity tests.	14.10.2019	15.11.2019

3.	32351401	Partial Differential Equations (Theory)	Core B.Sc. (H) Mathematics IV Sem. (CBCS)	Introduction, classification, construction and geometrical interpretation of first order partial differential equations (PDE), method of characteristic and general solution of first order PDE, canonical form of first order PDE, method of separation of variables for first order PDE. Classification of second order PDE, reduction to canonical forms, equations with constant coefficients, general solution.	01.01.2020	31.01.2020
				Mathematical modeling of vibrating string, vibrating membrane, Cauchy problem for second order PDE, homogeneous wave equation, initial boundary value problems, non-homogeneous boundary conditions, finite strings with fixed ends, non-homogeneous wave equation, Riemann problem, Goursat problem, spherical and cylindrical wave equation.	01.02.2020	8.03.2020
				Method of separation of variables for second order PDE, vibrating string problem, existence and uniqueness of solution of vibrating string problem, Conduction of heat in solids, gravitational potential, conservation laws and Burger's equations, heat conduction problem, existence and uniqueness of solution of heat conduction problem, Laplace and beam equation, non-homogeneous problem.	16.03.2020	28.04.2020
4.	32351401	Partial Differential Equations (Lab)	Core B.Sc. (H) Mathematics IV Sem (CBCS)	Practical 1,2,3,4.1	01.01.2020	31.01.2020
				Practical 4.2, 5,6,7	01.02.2020	8.03.2020
				Practical 8,9, Practical file submission and internal assessment	16.03.2020	28.04.2020

5.	32351602	Ring Theory and Linear Algebra-II	Core B.Sc. (H) Mathematics VI Sem.(CBCS)	Eigenspaces of a linear operator, diagonalizability, invariant subspaces and Cayley-Hamilton theorem, the minimal polynomial for a linear operator.	01.01.2020	31.01.2020
				Inner product spaces and norms, Gram-Schmidt orthogonalization process, orthogonal complements, Bessel's inequality, the adjoint of a linear operator, Least Squares Approximation, minimal solutions to systems of linear equations. Normal and self-adjoint operators, Orthogonal projections and Spectral theorem.	01.02.2020	1.03.2020
				Dual spaces, dual basis, double dual, transpose of a linear transformation and its matrix in the dual basis, annihilators	1.03-2020	8.03.2020
				Polynomial rings over commutative rings, division algorithm and consequences, principal ideal domains, factorization of polynomials reducibility tests, irreducibility tests, Eisenstein criterion, unique factorization in $\mathbb{Z}[x]$. Divisibility in integral domains, irreducibles, primes, unique factorization domains, Euclidean domains.	16.03.2020	28.04.2020

B. Outstation Field visits for students

Project Name / Paper Name			
Destination		Travel Mode	
Departure Month		Return	
Faculty-in-Charge		Number of Students going	

C. Internal Assessment: House Exam (Test/Presentation etc.) & Assignment*

Course Code	Course Name	Unique Paper Code	Topic Name	Day and Date	Date/s of Exhibiting the Assessment Sheet to students, Discussing the marks, Returning/Retaining
563	B.Sc. (H) Maths I sem	32351102	Systems of linear equations, Row reduction and echelon forms, Vector equations, The matrix equation $Ax = b$, Solution sets of linear systems, The inverse of a matrix; Subspaces, Linear independence, Basis and dimension, The rank of a matrix and applications	18.10.2019 (Friday)	28.10.2019
563	B.Sc. (H) Maths V sem	32351502	Group actions, stabilizers and kernels, permutation representation associated with a given group action, Applications of group actions: Generalized Cayley's theorem, Index theorem. Groups acting on themselves by conjugation, class equation and consequences	16.10.2019 (Wednesday)	26.10.2019
563	B.Sc. (H) Maths IV sem (Practical)	32351401	Practical Internal exam: Practical 1 to 6	31.01.2020 (Friday))	31.01.2020
	B.Sc. (H) Maths IV sem (Practical)	32351401	Practical Internal exam : Whole syllabus of Practicals	20.03.2020 (Friday)	20.03.2020
563	B.Sc. (H) Maths IV sem (Theory)	32351401	The Cauchy Problem and Wave Equation (Chapter 5)	23.03.2020 (Monday)	8.04.2020
563	B.Sc. (H) Maths VI sem	32351602	Inner Product Spaces	23.03.2020 (Monday)	8.04.2020

***Marks of the Internal Assessment to be submitted to the College 15 days before the last working day of 563 every semester**

For Departments

A. Department activities for students – Election/Freshers/Welcome/Farewell/Department Seminars/Society functions

Event	Date	Timing	Venue	Event In-charge / Supervisor
Department Election				
Fresher's Welcome				
Farewell				
Department Society functions				
Department Seminars				
Any Other ()				

B. FDP/Seminar/Workshops/Lectures to be attended and/or to be conducted

Event Topic						
Type / Nature (FDP/Webinar/Workshop etc.)						
Organizing In-charge						
Details regarding invited Resource Person						
Nature of Participation (e.g. Invited Speaker, Participant etc.)						
Date/s		Timing/s		Mode		