I – Academic Planner

A. Teaching Plan (Year : 2017-18) Semester: Odd / Even)

Teacher's Name : Dr. PREETI GARG Department: MATHEMATICS

Sl. No.	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
1.	42354302	Algebra	CORE (B.Sc. Prog. Analytical Chemistry III sem)	Groups: Definition and examples of abelian and non-abelian groups, The group $\mathbb{Z}_n$ of integers under addition modulo n and the group U(n) of units under multiplication modulo n; Cyclic groups from sets of numbers, Group of nth roots of unity, The general linear group; Elementary properties of groups. Groups of symmetries of (i) an isosceles triangle, (ii) an equilateral triangle, (iii) a rectangle, and (iv) a square; The permutation group Sym(n), and properties of permutations.	20.07.2017	17.08.2017
				Order of an element, Subgroups and its examples, Subgroup tests, Cyclic subgroup, Center of a group, Properties of cyclic groups. Cosets and its properties, Lagrange's theorem, Index of a subgroup. Normal subgroups: Definition, examples and characterizations, Factor groups.	18.08.2017	15.9.2017
				Definition and examples of rings, commutative and noncommutative rings, Properties of rings, Subrings and ideals. Integral domains and fields, Examples of fields: $\mathbb{Z}_n$, $\mathbb{Q}$, $\mathbb{R}$ and $\mathbb{C}$.	16.9.2017	29.9.2017

				Definition and examples of vector spaces, Subspaces, Linear independence, Basis and dimension of a vector space. Linear transformations, Null spaces, Ranges and illustrations of the rank nullity theorem.	7.10.2017	15.11.2017
2.	32351 102	ALGEBRA	CORE B.Sc.(H) Mathematics-I Sem	Polar representation of complex numbers, nth roots of unity, De Moivre's theorem for rational indices and its applications.	20.07.2017	10.08.2017
				Equivalence relations, Functions, Composition of functions, Invertible functions, One to one correspondence and cardinality of a set, Well-ordering property of positive integers, Division algorithm, Divisibility and Euclidean algorithm, Congruence relation between integers , Principles of Mathematical Induction, statement of Fundamental Theorem of Arithmetic.	11.08.2017	14.9.2017
				Systems of linear equations, row reduction and echelon forms, vector equations, the matrix equation Ax = b, solution sets of linear systems, applications of linear systems, Linear independence.	15.9.2017	29.9.2017
				Introduction to linear transformations, matrix of a linear transformation, inverse of a matrix, characterizations of invertible matrices.Subspaces of Rn, dimension of subspaces of Rn and rank of a matrix, Eigen values, Eigen Vectors and Characteristic Equation of a matrix.	7.10.2017	15.11.2017
3	32351 401	PARTIAL DIFFERENTIAL EQUATION (THEORY)	Core (B.Sc. (H) Maths (IV sem)	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.	01.01.2018	31.01.2018

				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.	1.02.2018	1.03.2018
				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.	8.03.2018	26.04.2018
4.	32351602	Ring Theory and Linear Algebra-II	Core (B.Sc. (H) Maths (VI sem)	Eigenspaces of a linear operator, diagonalizability, invariant subspaces and Cayley-Hamilton theorem, the minimal polynomial for a linear operator.	1.1.2018	31.1.2018
				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.	1.2.2018	1.3.2018
				Dual spaces, dual basis, double dual, transpose of a linear transformation and its matrix in the dual basis, annihilators	8.3.2018	15.3.2018
				Polynomial rings over commutative rings, division algorithm and consequences, principal ideal	16.3.2018	26.4.2018

				domains, factorization of polynomials, reducibility tests, irreducibility tests, Eisenstein criterion, unique factorization in Z[x]. Divisibility in integral domains, irreducibles, primes, unique factorization domains, Euclidean domains.		

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
567	B.Sc. Prog. Analytical Chemistry III sem)	42354302	Test-I: Groups Test-II: Rings Assignment: Vector Spaces	21.8.2017 Monday 9.10.2017 Monday 10.11.2017 Friday	After one week
563	B.Sc.(H) Maths I Sem	32351102	Test-I Complex Numbers Assignment: Unit II Test-II: Linear Algebra	14.08.2017 Mon 14.09.2017Thursday 30.10.2017Monday	After one week
563	B.Sc. (H) Maths IV sem	32351401	Test-I:First order PDE Testr-II: second order linear Equations Assignments	5.2.2018 Monday 12.3.2018 Monday 16.4.2018 Monday	After one week

563	B.Sc. (H) Maths (VI sem	32351602	Test-I: Chapter5 and 7(Diagonalisation, Minimal Polynomials) Test-II:Inner Product Spaces Assignment: Rings	5.2.2018 Monday 12.3.2018 Monday 16.4.2018 Monday	After one week

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

D. Organization of Department/College Society Meetings by Staff Advisor/Convener

Department/Society	Meeting Date	Purpose
Tensors-The mathematical Society	26.09.2017	Elections of office bearers held
Tensors-The mathematical Society	16.01.2018	To discuss about Maths Fest-SUPREMUM

E. College Functions

College Function	Function Date	Role to be played

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	26.09.2017	10.40 a.m	Room No. 111	Dr. Raj Kumar and Dr. Kavita Gupta
Fresher's Welcome	05.09.2017	3.00 p.m	Canteen Lawns	Dr. Raj Kumar and Dr. Kavita Gupta
Farewell	19.04.2018	3.00 p.m	Canteen Lawns	Dr. Raj Kumar and Dr. Kavita Gupta
Department Society functions	30.01.2018 and 30.01.2019	10.00 a.m – 5.00 p.m	Canteen lawns, Seminar Room, Room no. 111, Computer Lab	Dr. Raj Kumar and Dr. Kavita Gupta
Department Seminars	30.01.2018	10.00 a.m	Academic Auditorium	Dr. Raj Kumar and Dr. Kavita Gupta
Any Other ( )				

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

Event Topic	"Mathematics in Literature , Philosophy, and Art".
Type / Nature (FDP/Webinar/Workshop etc.)	Qazi Zameeruddin Memorial Lecture
Organizing In-charge	Dr. Raj Kumar and Dr. Kavita Gupta
Details regarding invited Resource Person	Prof. Dinesh Singh, Ex- Vice Chancellor, University of Delhi
Nature of Participation (e.g. Invited Speaker, Participant etc.)	**Participation as TIC**

Date/s	**30.01.2018**	**Timing/s**	**10.00 a.m**	**Mode**	**Physically**

C.

Event Topic		**Talk** on "Banach Frames for Banach Gelfand Triples			
Type / Nature (FDP/Webinar/Workshop etc.)		Talk			
Organizing In-charge		Dr. Raj Kumar and Dr. Kavita Gupta			
Details regarding invited Resource Person		Hans G. Feightinger, University of Vienna and TUM, Vienna , Austria.			
Nature of Participation (e.g. Invited Speaker, Participant etc.)		**Participant**			
Date/s	**30.01.2018**	**Timing/s**	**11.00 a.m**	**Mode**	**Physically**

Event Topic		International workshop on "Wavelets, Frames and Applications – III "			
Type / Nature (FDP/Webinar/Workshop etc.)		International workshop			
Organizing In-charge		Dr. S.K. Kaushik			
Details regarding invited Resource Person		Dinesh Singh (India), Akram Aldroubi (U.S.A) , Pap Margrit (Hungary), Ilona Simon (Hungary), Boris Golubov (Russia), Emily King (Germany), V. Protasov (Russia), R.A Zalik (U.S.A) , Sandra Saliani (Italy), Douglas Hardin (USA), Ilya Krishtal (USA), Ajay Kumar (India), M.A. Dehghan (Iran), Anton Makarov (Russia), M. A. Skopina (Russia), M. Tahami (Iran), L. Novikova (Russia).			
Nature of Participation (e.g. Invited Speaker, Participant etc.)		**Presented research paper**			
Date/s	**14.12.2017 to 20.12.2017**	**Timing/s**	**9.00 a. m**	**Mode**	**Physically**