Lesson Plan
MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans-Odd Semester (Semester-I)
Session – 2023-24

Department: Mathematics

Class: MSc-I Mathematics

Subject: MATH 601S; Real Analysis-I

Name of the Teacher: Dr Nisha Sharma

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	**To**		
August	16.08.2023	31.08.2023	Countable and Uncountable Sets, Metric Spaces, Open and Closed Sets, Interior Point	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.09.2023				
September	01.09.2023	30.09.2023	Limit Point, Closed Set, Equivalent Metrices, Subspaces, Compactness, Connectedness, Convergent Sequences	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 03.10.2023				
October	03.10.2023	31.10.2023	Subsequences, Complete Metric Spaces, Limit Inferior and Superior, Series, Limit and Continuity, Reimann Stieltjes integral-definition and existence results.	Doubt session, Assignments, Presentations, Viva
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.11.2023				
November	01.11.2023	30.11.2023	Properties of R-S integral, Relation between R-S and R integral, Integration of vector-valued function, Sequence and Series of functions	Doubt session, Assignments,Presentations, Question papers discussed. Revision
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 30.11.2023				
End semester Examination 01.12.2023 to 28.12.2023				

Subject: MATH 602S; Algebra I

Name of the Teacher: Dr Swati Sidana

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	**To**		
August	16.08.2023	31.08.2023	Review of basic concepts of groups with emphasis on exercises. Permutation groups, Even and odd permutations	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.09.2023				
September	01.09.2023	30.09.2023	Conjugacy classes of permutations, Alternating groups, Simplicity of An, n > 4. Cayley's Theorem, Direct products, Fundamental Theorem for finite abelian groups, Sylow theorems and their applications, Finite Simple groups	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 03.10.2023				
October	03.10.2023	31.10.2023	Survey of some finite groups, Groups of order p2, pq (p and q primes). Solvable groups, Normal and subnormal series, composition series, the theorems of Schreier and Jordan Holder	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.11.2023				
November	01.11.2023	30.11.2023	Review of basic concepts of rings with emphasis on exercises. Polynomial rings, formal power series rings, matrix rings, the ring of Guassian Integers.	Doubt session, Assignments, Power Point Presentations, Question papers discussed. Revision of a few topics
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 30.11.2023				
End semester Examination 01.12.2023 to 28.12.2023				

Subject:MATH-603S: Differential Equations

Name of the Teacher: Dr Navjot Kaur

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	**To**		
August	16.08.2023	31.08.2023	Existence and uniqueness of solution of first order equations. Boundary value problems and Strum-Liouville theory (Homogeneous).	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.09.2023				
September	01.09.2023	30.09.2023	Non-HomogeneousStrum-Liouville Boundary value problems. ODE in more than 2-variables (Surfaces and curves in three dimension).	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 03.10.2023				
October	03.10.2023	31.10.2023	Classification and methods to solve specific kind of differential equations. Partial differential equations of first order (Linear and non-linear).	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.11.2023				
November	01.11.2023	30.11.2023	Partial differential equations of second order and their classification.	Doubt session, Question papers discussed. Revision tests.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 30.11.2023				
End semester Examination 01.12.2023 to 28.12.2023				

Subject: MATH 604S; Complex Analysis-I

Name of the Teacher: Ms Promila

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	**To**		
August	16.08.2023	31.08.2023	Complex plane, geometrical representation of complex number, joint equation of circle and line, stereographic projection and spherical of the extended complex plane. Topology on complex plane, connected and simply connected sets.	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.09.2023				
September	01.09.2023	30.09.2023	Complex valued functions and their continuity. Curves, connectivity through polygonal lines. Analytic functions, Cauchy-Riemann equations, Harmonic functions and Harmonic conjugates. Power series, exponential and trigonometric functions, arg z, log z, a z and their continuous branches.	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 03.10.2023				
October	03.10.2023	31.10.2023	Complex Integration, line integral, Cauchy's theorem for a rectangle, Cauchy's theorem in disc, index of a point with respect to a closed curve.	Doubt session, Assignments, Power Point Presentation.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.11.2023				
November	01.11.2023	30.11.2023	Cauchy's Integral farmula, Higher derivatives, Morrera's theorem, Liouville's theorem, fundamental theorem of algebra. The general form of Cauchy's theorem.	Doubt session, Assignments, Power Point Presentations, Question papers discussed. Revision of a few topics
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 30.11.2023				
End semester Examination 01.12.2023 to 28.12.2023				

Subject: MATH 605S; Number Theory-I

Name of the Teacher: Dr Leetika

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	**To**		
August	16.08.2023	31.08.2023	Divisibility, Greatest common divisor, Euclidean Algorithm, The Fundamental Theorem of arithmetic,	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.09.2023				
September	01.09.2023	30.09.2023	Congruences, Special divisibility tests, Chinese remainder theorem, Fermat's little theorem, Wilson's theorem, Residue classes and reduced residue classes,An Application to cryptography, Euler's theorem, Arithmetic functions	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 03.10.2023				
October	03.10.2023	31.10.2023	Mobius inversion Formula, the greatest integer function, perfect numbers, Mersenne primes and Fermat numbers. Primitive roots and indices, Quadratic residues	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.11.2023				
November	01.11.2023	30.11.2023	Quadratic reciprocity law, Jacobi symbol, Binary quadratic forms and their reduction, sums of two and four squares, positive definite binary quadratic forms, Diophantine equations	Doubt session, Assignments, Power Point Presentations, Question papers discussed. Revision of a few topics
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 30.11.2023				
End semester Examination 01.12.2023 to 28.12.2023				

Lesson Plan
MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans-Even Semester (Semester-II)
<u>Session – 2023-24</u>

Department: Mathematics

Class: MSc-I Mathematics
Subject: MATH 621S; Real Analysis-II

Name of the Teacher: Dr Nisha Sharma

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	To		
January	09.01.2024	31.01.2024	Differentiation of vector-valued function, Space of linear transformations as a metric - spaces, Differentiation of vector-valued function of several variables, Inverse function theorem, Implicit function theorem, Outer measure,	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.02.2024				
February	01.02.2024	29.02.2024	Measurable sets and Lebesgue measure, Non-measurable Set , Measurable functions, Littlewood's three principles,	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.03.2024				
March	01.03.2024	30.03.2024	Lebesgue Integral of bounded function over a set of finite mesure, Lebesgue Integral of non-negative function, General Lebesgue Integral Convergence in measure,	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.04.2024				
April	01.04.2024	01.05.2024	Differentiation of monotone function, Differentiation of an integral, Absolute continuity, Convex functions	Doubt session, Assignments, Power Point Presentations, Question papers discussed. Revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 02.05.2024				
End semester Examination 04.05.2024 to 01.06.2024				

Subject: MATH 622S; Algebra II

Name of the teacher: Dr Swati Sidana

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	**To**		
January	09.01.2024	31.01.2024	Factorization Theory in Integral Domains, Divisibility, Unique Factorization Domain (UFD), Principal Ideal Domain (PID), Euclidian Domain (ED) and their relationships.	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.02.2024				
February	01.02.2024	29.02.2024	Noetherian and Artinian Rings, Examples and Counter Examples, Artinian Rings without zero divisors, Nil Ideals in Artinian Rings, Hilbert Basis Theorem.	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.03.2024				
March	01.03.2024	30.03.2024	Modules, Difference between Modules and Vector Spaces, Module Homomorphisms, Quotient Module, Completely reducible or Semisimple Modules, Free Modules, Representation and Rank of Linear Mappings	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.04.2024				
April	01.04.2024	01.05.2024	Smith normal Form over a PID, Finitely generated modules over a PID, Rational Canonical Form, Applications to finitely generated abelian groups	Doubt session, Assignments, Power Point Presentations, Question papers discussed. Revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 02.05.2024				
End semester Examination 04.05.2024 to 01.06.2024				

Subject: MATH-623S : Vector Analysis And Mechanics

Name of the Teacher: Dr Navjot Kaur

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	**To**		
January	09.01.2024	31.01.2024	**Vectors:**Vectors Scalar and vector point functions, Differentiation and integration of vectors, Gradient divergence and curl operators.	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.02.2024				
February	01.02.2024	29.02.2024	Green's and Stoke's theorems, Gauss' divergence theorem, Curvilinear co-ordinates.	Doubt session, Assignments, Class tests.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.03.2024				
March	01.03.2024	30.03.2024	**Mechanics:** Mechanics Generalized co-ordinates. Lagrange's equations. Hamilton's canonical equations. Hamilton's principle of least action. Reduction to the equivalent one body problem. The equations of motion and first integral.	Doubt session, Assignments, Power Point Presentations. Class tests.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.04.2024				
April	01.04.2024	01.05.2024	The equivalent one-dimensional problem and classification of orbits. The Viral theorem. Rigid body motion about an axis. Moving axis.	Doubt session, Assignments, Question papers discussed. Revision of the topics important from examination point of view.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 02.05.2024				
End semester Examination 04.05.2024 to 01.06.2024				

Subject: MATH 624S; Complex Analysis-II

Name of the Teacher: Ms Promila

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	**To**		
January	09.01.2024	31.01.2024	Taylor's theorem, Laurent's theorem, Maximum Modulus principal and Schwarz's Lemma, zeros and singularities of a function, application of Schwarz's Lemma, Taylor series and Laurent series	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.02.2024				
February	01.02.2024	29.02.2024	Singularities, Cauchy's Residue theorem,,calculus of residue,bilinear transformation,Zeros and poles of meromorphic functions,Rouche's theorem, Argument Principal	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.03.2024				
March	01.03.2024	30.03.2024	Definitions and examples of conformal mappings,infinite products,weierstrass theorem,,Mittagleffer's theorem, canonical product	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.04.2024				
April	01.04.2024	01.05.2024	Analytic continuation through power series, Natural boundary,The Gamma function and Riemann Zeta function	Doubt session, Assignments, Power Point Presentations, Question papers discussed. Revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 02.05.2024				
End semester Examination 04.05.2024 to 01.06.2024				

Subject: MATH 625S; Number Theory-II

Name of the Teacher: Dr Leetika

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	**To**		
January	09.01.2024	31.01.2024	Farey sequences, Continued fractions, Approximation of reals by rationals, Pell's equations,	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.02.2024				
February	01.02.2024	29.02.2024	Minkowski's theorem and its applications,	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.03.2024				
March	01.03.2024	30.03.2024	Partitions,Order of magnitude and average order of arithmetic functions,	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.04.2024				
April	01.04.2024	01.05.2024	Euler Summation Formula, Abel's Identity, Elementary results on distribution of primes.	Doubt session, Assignments, Power Point Presentations, Question papers discussed. Revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 02.05.2024				
End semester Examination 04.05.2024 to 01.06.2024				