Lesson Plan
MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans-Odd Semester (Semester-III)
Session – 2024-25
Department: Mathematics
Class: MSc-II Mathematics
Subject: MATH-617S: Field Theory
Name of the Teacher: Dr Swati Sidana

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	To		
July	22.07.2024	31.07.2024	Fields, examples, characteristic of a field, subfield and prime field of a field, field extension, the degree of a field extension.	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01..08.2024				
August	01.08.2024	31.08.2024	Algebraic extentions and transcendental extension, Adjunction of roots, splitting fields, finite fields, existence of algebraic closure, algebraically closed fields. Separable, normal and purely inseparable extensions.	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 02..09.2024				
September	02..09.2024	30.09.2024	Perfect fields, primitive elements. Langrange's theorem on primitive elements. Galois extensions, the fundamental theorem of Galois theory, Cyclotomic extensions, and Cyclic Extensions.	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.10.2024				
October	01.10.2024	31.10.2024	Applications of cyclotomic extensions and Galois theory to the constructability of regular polygons.	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.11.2024				
November	01.11.2024	18.11.2024	Solvability of polynomials by radicals.	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 18.11.2024				
End semester Examination 19.11.2024 to 26.12.2024				

Lesson Plan

MCM DAV College for Women, Sector – 36A, Chandigarh

Monthly Teaching Plans-Odd Semester (Semester-III)

Session – 2024-25

Department: Mathematics

Class: MSc-II Mathematics

Subject: MATH-618S: Topology

Name of the Teacher: Dr Sonica

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	To		
July	22.07.2024	31.07.2024	Topological Spaces: Definition and Examples, some special topologies, Comparison of topologies, Bases for a topology, the subspace topology, closed sets and limit points.	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.08.2024				
August	01.08.2024	31.08.2024	Continuity: Continuous functions, the order topology, the product topology, the metric topology, the quotient topology. Connectedness: Connected spaces, connected subspaces of the real line, components and local connectedness.	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 02.09.2024				
September	01.09.2024	30.09.2024	Compactness: Compact spaces, compact space of a real line, limit point compactness, local compactness, sequentially compact spaces.	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.10.2024				
October	01.10.2024	31.10.2024	Countability Axioms and Seperation Axioms:First countability, second countability, Lindelof space, seperable space,T0, T1, T2, T3, T4 spaces, regular spaces, normal spaces, the Uryson Lemma, the UrysohnMetrization Theorem.	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.11.2024				
November	01.11.2024	18.11.2024	Seperation Axioms and Nets:The Tietz extension Theorem, The TychonoffThorem and the nets.	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 18.11.2024				
End semester Examination 19.11.2024 to 26.12.2024				

Lesson Plan
MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans-Odd Semester (Semester-III)
Session – 2024-25

Department: Mathematics

Class: MSc-II Mathematics
Subject: MATH-661S: Probability and Mathematical Statistics-I

Name of the Teacher: Dr Chitra

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	To		
July	22.07.2024	31.07.2024	Probability: Bayes' theorem and its applications. Discrete and Continuous random variables. Probability mass and density function, Expectation of single and two dimensional random variables.	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.08.2024				
August	01.08.2024	31.08.2024	Distributions Binomial. Poisson distribution, Negative Binomial and Hypergeometric..	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 02.09.2024				
September	01.09.2024	30.09.2024	Uniform, Normal distribution. Beta, Gamma, Chi-square and Bivariate normal distributions.	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.10.2024				
October	01.10.2024	31.10.2024	Chebyshev's inequality, weak law of large numbers, Central limit theorems Measurement scales, Attribute and variable,Collection, Compilation and Tabulation of data, Measures of central tendency their properties. Standard deviation and Kurtosis, Box and Whisker plot Correlation & Regression Analysis Karl Pearson's and Spearman's rank correlation coefficient.	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.11.2024				
November	01.11.2024	18.11.2024	Linear Regression and its properties. Theory of attributes, independence and association. Moment generating function and probability generating 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 18.11.2024				
End semester Examination 19.11.2024 to 26.12.2024				

Lesson Plan

MCM DAV College for Women, Sector – 36A, Chandigarh

Monthly Teaching Plans-Odd Semester (Semester-III)

Session – 2024-25

Department: Mathematics

Class: MSc-II Mathematics

Subject: MATH-672S: Computational Techniques-I

Name of the Teacher: Dr NAVJOT KAUR

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	To		
July	22.07.2024	31.07.2024	Solution of non-linear equations: Functional iteration, Bisection, Secant, Regula-Falsi, Newton-Raphson and Bairstow's methods,	Syllabus, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.08.2024				
August	01.08.2024	31.08.2024	Rate of convergence of numerical methods, Solution of linear system of equations: Gauss elimination, Gauss Seidal and Triangularization methods, Condition of convergence of these methods. Interpolation: Finite difference operators, Newton interpolation, Gauss Forward and backward interpolation formulae, Newton's divided difference formula, Lagrange's Formula, Inverse interpolation, Hermite interpolation.	Syllabus, Examination pattern discussed, Doubt Session
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 02.09.2024				
September	01.09.2024	30.09.2024	Programmer's model of a computer, Types of computers, General awareness of Computer Hardware – CPU, Input, Output and peripherals, Software and Programming languages. Programming in FORTRAN 77: Character set, constants, variables, Arithmetic expressions, Format specification.	Doubt session, Assignments (MS-WORD), revision of a few topics. . Practical classes to illustrate various features of MS-WORD
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.10.2024				
October	01.10.2024	31.10.2024	READ, WRITE statements, unformatted I/O Statements, Unconditional GO TO, Computed GO TO, Arithmatic and Logical IF	Doubt session along with practical implication in the lab. Assignments,

			statements, IF-THEN-ELSE, Nested IF-THEN-ELSE, ELSE-IF-THEN, DO loops, Nested DO loops, CONTINUE Statement, Data statement, Double Precision. Logical Data, Complex Data, WHILE Structure, Arrays-One and multidimensional,	Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.11.2024				
November	01.11.2024	18.11.2024	Subscripted Variables, Implied DO loops, Sorting Problem, Function Subprograms and Subroutine subprograms, COMMON, EQUIVALENCE, Simple programs.	Doubt session, Assignments, Power Point Presentations, Question papers discussed. Revision.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 18.11.2024				
End semester Examination 19.11.2024 to 26.12.2024				

Lesson Plan
MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans-Odd Semester (Semester-III)
Session – 2024-25
Department: Mathematics
Class: MSc-II Mathematics
Subject: MATH-678S: Linear Programming Problems
Name of the Teacher: Dr Leetika

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	To		
July	22.07.2024	31.07.2024	Linear Programming and examples, Convex Sets, Hyperplane, Open and Closed half-spaces, Feasible, Basic Feasible and Optimal Solutions, Extreme Point & graphical methods	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.08.2024				
August	01.08.2024	31.08.2024	Simplex method, Charnes-M method, Two phase method, Determination of Optimal solutions, unrestricted variables, Duality theory, Dual linear Programming Problems, fundamental properties of dual Problems, Complementary slackness, Unbounded solution in Primal. Dual Simplex Algorithm,	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 02.09.2024				
September	01.09.2024	30.09.2024	Sensitivity analysis ,Parametric Programming, Revised Simplex method, Transportation Problems, Balanced and unbalanced Transportation problems, U-V method, Paradox in Transportation problem	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.10.2024				
October	01.10.2024	31.10.2024	Assignment problems, Integer Programming problems: Pure and Mixed Integer Programming problems, 0-1 programming problem, Gomary's algorithm, Branch & Bound Technique. Travelling salesman problem	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.11.2024				
November	01.11.2024	18.11.2024	, Gomary's algorithm, Branch & Bound Technique. Travelling salesman problem	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 18.11.2024				
End semester Examination 19.11.2024 to 26.12.2024				

Lesson Plan
MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans-Even Semester (Semester-IV)
Session – 2024-25

Department: Mathematics

Class: MSc-II Mathematics
Subject: MATH-637S: Linear Algebra

Name of the Teacher: Dr Swati Sidana

Month	**Date**		**Topics to be covered**	**Academic Activity to be Undertaken**
	From	**To**		
January	10.01.2025	31.01.2025	Definition and examples of vector spaces (over arbitrary fields), subspaces, direct sum of subspaces, linear dependence and independence, basis and dimensions.	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.02.2025				
February	01.02.2025	28.02.2025	linear transformations, quotient spaces, algebra of linear transformations, linear functions, dual spaces, matrix representation of a linear transformation, rank and nullity of a linear transformation, invariant subspaces.	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.03.2025				
March	01.03.2025	31.03.2025	Characteristic polynomial and minimal polynomial of a linear transformation, eigenvalues and eigenvectors of a linear transformation, diagonalization and triangularization of a matrix, Jordan and Rational canonical forms.	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.04.2025				
April	01.04.2025	26.04.2025	Bilinear forms, symmetric bilinear forms, Sylvester's theorem, quadratic forms, Hermitian forms, Inner product spaces, Gram-schmidt orthonormalization process.	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 26.04.2025				
End semester Examination 28.04.2025 to 04.06.2025				

Lesson Plan

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans-Even Semester (Semester-IV)
Session – 2024-25

Department: Mathematics

Class: MSc-II Mathematics
Subject: MATH-638S: Functional Analysis

Name of the Teacher: Dr Sonica

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	To		
January	10.01.2025	31.01.2025	Normed Linear spaces: Normed linear spaces , its examples, Banach Spaces with examples of lp spaces, Lp ([a,b]) spaces and C ([a,b]), Hahn Banach theorems, open mapping theorem, closed graph theorem, Baire Category theorem.	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.02.2025				
February	01.02.2025	28.02.2025	Principle of Uniform Boundedness: BanachSteinhauns theorem (uniform boundedness principle), Boundedness and continuity of linear transformation, Dual Spaces, embedding in second dual.	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.03.2025				
March	01.03.2025	31.03.2025	Hilbert Spaces: Hilbert spaces, orthonormal basis, Bessel's inequality, Riesz Fischer theorem, Parseval's identity, bounded Linear functional, projections, Riesz Representation theorem.	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.04.2025				
April	01.04.2025	26.04.2025	Operators: Adjoint operators, self adjoint, normal, unitary and isometric operators.	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 26.04.2025				
End semester Examination 28.04.2025 to 04.06.2025				

Lesson Plan
MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans-Even Semester (Semester-IV)
Session – 2024-25

Department: Mathematics

Class: MSc-II Mathematics
Subject: MATH-681S: Probability and Mathematical Statistics-II

Name of the Teacher: Dr Navjot

Month	**Date**		**Topics to be covered**	**Academic Activity to be Undertaken**
	From	**To**		
January	10.01.2025	31.01.2025	Point estimation, unbiasedness, consistency, efficiency and Sufficiency. Factorization theorem, completeness, Rao-Blackwell theorem, Cramer-Rao inequality. Maximum likelihood method of estimation and method of moments. Interval estimation, confidence intervals for means, difference of means and variances.	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.02.2025				
February	01.02.2025	28.02.2025	The basic idea of significance test. Null and alternative hypothesis, Type-I and TypeII errors. Uniformly most powerful tests, Likelihood Ratio tests.	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.03.2025				
March	01.03.2025	31.03.2025	t , Chi-square and F-distributions. Tests of significance based on t, Chi-square and F Distribution	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.04.2025				
April	01.04.2025	26.04.2025	One way and two way Analysis of Variance (ANOVA). Non-Parametric Tests: Sign test, Wilcoxon signed rank test, Mann-whitney test.	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 26.04.2025				
End semester Examination 28.04.2025 to 04.06.2025				

Lesson Plan
MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans-Even Semester (Semester-IV)
Session – 2024-25

Department: Mathematics

Class: MSc-II Mathematics
Subject: MATH-692S : Computational Techniques-II

Name of the Teacher: Dr NAVJOT KAUR

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	To		
January	10.01.2025	31.01.2025	MS Excel: Introduction, Functions and Formulae, Graphics and Data base. Numerical Differentiation, Numerical Integration: General formulae, Trapeziodal rule, Simpson's 1/3 and 3/8 rule, Romberg integration, Newton-Cotes formulae, Gaussian integration.	Syllabus, Examination pattern discussed, Doubt Session along with practical implication in the lab.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.02.2025				
February	01.02.2025	28.02.2025	Programming in C: Historical development of C, Character set, Constants, Variables, Keywords, Operators, Hierarchy of arithmetic operations, if and if-else statements, Logical and Conditional Operators, Switch structure, while structure, do-while and for-Loops, Nested loops, Break and Continue statements. Solution of Ordinary Differential Equations: Taylor's series, Picard method of Successive approximations, Euler's method, Modified Euler's method, Runge Kutta Method-2nd and 4th order.	Doubt session, Assignments, revision of a few topics. Practical implementation of the content covered (Program writing and compile).
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.03.2025				
March	01.03.2025	31.03.2025	Solution of ordinary differential equations, Predictor-Corrector methods, Milne-Simpson's method, Adam's – Bashforth method, Finite difference method for boundary value problems. Arrays, Functions, Print Function, Function Declaration and Function Prototype, Return Statement, Local and Global Variables, Passing Arrays	Doubt session, Power Point Presentations. Practical implementation.

			as parameter, Recursion and Library Functions, Files in C.	
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.04.2025				
April	01.04.2025	26.04.2025	Introduction to pointers, Simple programs to illustrate the usage. Approximation of functions: Chebyshev Polynomials, Orthogonality of Chebyshev polynomials, Lanczos Economization of Power series.	Doubt session, Practical implementation of the topic. Discussion of previous year question papers followed by revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 26.04.2025				
End semester Examination 28.04.2025 to 04.06.2025				

Lesson Plan
MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans-Even Semester (Semester-IV)
Session – 2024-25

Department: Mathematics

Class: MSc-II Mathematics
Subject: MATH-698S: Non-Linear Programming Problems

Name of the Teacher: Dr Leetika

Month	Date		Topics to be covered	Academic Activity to be Undertaken
	From	To		
January	10.01.2025	31.01.2025	Nonlinear Programming: Convex functions, Concave functions, Definitions and basic properties, subgradients of convex functions, Differentiable convex functions, Minima and Maxima of convex function and concave functions. Generalizations of convex functions and their basic properties. Unconstrained problems,	Syllabus, Examination pattern discussed, Doubt Session.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.02.2025				
February	01.02.2025	28.02.2025	Necessary and sufficient optimality criteria of first and second order. First order necessary and sufficient Fritz John conditions and Kuhn-Tucker conditions for Constrained programming problems with inequality constraints, with inequality and equality constraints. Kuhn Tucker conditions and linear programming problems.	Doubt session, Assignments, revision of a few topics.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.03.2025				
March	01.03.2025	31.03.2025	Duality in Nonlinear Programming, Weak Duality Theorem, Wolfe's Duality Theorem, Hanson-Huard strict converse duality theorem, Dorn's duality theorem, strict converse duality theorem, Dorn's Converse duality theorem, Unbounded dual theorem, theorem on no primal minimum. Duality in Quadratic Programming. Quadratic Programming:Wolfe's method, Beale's method for Quadratic programming.	Doubt session, Assignments, Power Point Presentations.
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 01.04.2025				
April	01.04.2025	26.04.2025	Linear fractional programming, method due to Charnes and Cooper. Nonlinear fractional programming, Dinkelbach's approach. Game theory - Two-person, Zero-sum Games with mixed strategies,	Doubt session, Assignments, Power Point Presentations, Question papers discussed. Revision of a few topics.

			graphical solution, solution by Linear Programming.	
Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans on 26.04.2025				
End semester Examination 28.04.2025 to 04.06.2025				