Govt. P.G. College Mahindergarh

Haryana

Lesson Plan

Session 2025-2026

Subject: Mathematics.

Semester: 1st **B.A/ B.sc (N.M) MATH 101**

No. Of Week	Section Name	Topics
1.	Section A:	ε-δ definition of limit and continuity of a real valued function,
2.	Section A: Cont.	Basic properties of limits,
3.	Section A: Cont.	Continuous functions and classification of discontinue Types of discontinuities,
4.	Section A : Cont.	Differentiability of functions, Application of L'Hospital rule to indeterminate forms,
5	Section A:	Successive differentiation
6.	Section A:	Leibnitz theorem, Taylor's and McLaurin's series expansion with different forms of remainder.
7.	Section B:	Asymptotes: Horizontal, vertical and oblique asymptotes for algebraic curves.
8.	Section B: Cont.	Asymptotes for polar curves
9.	Section B : Cont.	Intersection of a curve and its asymptotes,
10.	Section B: cont.	Curvature, radius of curvature for Cartesian curves,
11	Section B: Cont.	Curvature and radius of curvature of curves, Cartesian, parametric, polar & intrinsic forms
12	Section B:	Newton's method, Centre of curvature and circle of curvature
13	Section C:	Multiple points,
14	Section C: cont.	Node, Cusp,
15	Section C:	Conjugate point, Tests for concavity and convexity, Circle of curvature.

16	Section C: cont.	Points of inflexion, Tracing of curves, Reduction formulae.
17	Section C: cont.	Tracing of curves,
18	Section C:	Reduction formulae.
19	Section D:	Rectification,
20	Section D: Cont.	Intrinsic equation of a curve,
21	Section D: Cont.	Quadrature,
22	Section D: Cont.	Area bounded by closed curves,
23	Section D: Cont.	Volumes and surfaces of solids of revolution

Books Recommended:

Book s Recommended: 1. P.K. Jain and Khalil Ahmad: Metric Spaces, 2nd Ed., Narosa, 2004
2. T.M. Apostol: Mathematical Analysis, Narosa Publishing House, New Delhi, 1985
3. R.R. Goldberg : Real analysis, Oxford & IBH publishing Co., New Delhi, 1970
4. D. Somasundaram and B. Choudhary : A First Course in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997
5. Shanti Narayan : A Course of Mathematical Analysis, S. Chand & Co., New Delhi
6. E.T. Copson, Metric Spaces, Cambridge University Press, 1968.
7. G.F. Simmons : Introduction to Topology and Modern Analysis, McGraw Hill, 1963.

Followed by
Dr. Sandeep kumari
Assistant Prof. Department. Of Mathematics
Govt. P.G. College Mahindergarh

Govt.P.G. College Mahendergarh
Haryana
Lesson Plan 2025-2026

Subject: Mathematics.
Semester: 3rd B.A Minor Differential Equations I
Subject code: MATH-301

No. Of Week	Section Name	Topics
1.	Section A:	Basic concepts and genesis of ordinary differential equations,
2.	Section A: Cont.	Order and degree of a differential equation, Solutions of differential equations of first order and first degree,
3.	Section A: Cont.	Exact differential equations, Integrating factor, First order higher degree equations solvable for x, y and p, Lagrange's equations.
4.	Section B:	Clairaut's form and singular solutions. Orthogonal trajectories of one parameter families of curves in a plane
5	Section B: Cont.	Solutions of linear ordinary differential equations with constant coefficients, linear non-homogeneous differential equations.
6.	Section B: Cont.	Linear differential equation of second order with variable coefficients. Method of reduction of order.
7.	Section B	Method of undetermined coefficients, method of variation of parameters.
8.	Section B	Cauchy-Euler equation.
9.	Section C : Cont.	Solution of simultaneous differential equations.
10.	Section C	Total differential equations. Genesis of Partial differential equations (PDE).
11	Section C: Cont.	Concept of linear and nonlinear PDEs. Complete solution, general solution and singular solution of a PDE.
12	Section C	Linear PDE of first order. Lagrange's method for PDEs of the form: $P(x, y, z)\, p + Q(x, y, z)\, q = R(x, y, z)$, where $p=\partial z/\partial x$ and $q=\partial z/\partial y$
13	Section D:	Integral surfaces passing through a given curve. Surfaces orthogonal to a given system of surfaces.

14	Section D: cont.	Compatible systems of first order equations. Charpit's method.
15	Section D: cont.	Special types of first order PDEs, Jacobi's method.
16	Section D:	Second Order Partial Differential Equations with Constant Coefficients

Books Recommended:

1. D.A. Murray: Introductory Course in Differential Equations. Orient Longaman (India). 1967
2. A.R.Forsyth: A Treatise on Differential Equations, Machmillan and Co. Ltd. London
3. E.A. Codington: Introduction to Differential Equations.
4. S.L.Ross: Differential Equations, John Wiley & Sons
5. B.Rai & D.P. Chaudhary: Ordinary Differential Equations; Narosa, Publishing House Pvt. Ltd.

Followed by

Dr. Sandeep Kumari
Assistant Prof.
Deptt. Of Mathematics
Govt P.G. College M/garh.

Govt. P.G. College Mahindergarh

Haryana

Lesson Plan

Session 2025-2026

Subject: Mathematics.

Semester: 5th B.sc (N.M) Real Analysis

Subject code: 12BSM351

No. Of Week	Section Name	Topics
1.	Section A:	Riemann integral
2.	Section A: Cont.	Integrabililty of continuous and monotonic functions
3.	Section A:	The Fundamental theorem of integral calculus. Mean value theorems of integral calculus.
4.	Section B:	Improper integrals and their convergence, Comparison tests, Abel's and Dirichlet's tests
5	Section B: Cont.	Frullani's integral, Integral as a function of a parameter.
6.	Section B:	Continuity, Differentiability and integrability of an integral of a function of a parameter.
7.	Section C	Definition and examples of metric spaces, neighborhoods, limit points, interior points,
8.	Section C: Cont.	open and closed sets, closure and interior, boundary points, subspace of a metric space, equivalent metrics
9.	Section C : Cont.	Cauchy sequences, completeness, Cantor's intersection theorem, Baire's category theorem, contraction Principle
10.	Section D	Continuous functions, uniform continuity, compactness for metric spaces, sequential compactness,
11	Section D: Cont.	Bolzano-Weierstrass property, total boundedness, finite intersection property,
12	Section D:	Continuity in relation with compactness, connectedness , components, continuity in relation with connectedness.

Books Recommended:

Book s Recommended: 1. P.K. Jain and Khalil Ahmad: Metric Spaces, 2nd Ed., Narosa, 2004
2. T.M. Apostol: Mathematical Analysis, Narosa Publishing House, New Delhi, 1985
3. R.R. Goldberg : Real analysis, Oxford & IBH publishing Co., New Delhi, 1970
4. D. Somasundaram and B. Choudhary : A First Course in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997
5. Shanti Narayan : A Course of Mathematical Analysis, S. Chand & Co., New Delhi
6. E.T. Copson, Metric Spaces, Cambridge University Press, 1968.
7. G.F. Simmons : Introduction to Topology and Modern Analysis, McGraw Hill, 1963.

Followed by

Dr. Sandeep kumari
Assistant Prof. Department. Of Mathematics
Govt P.G. College Mahindergarh

Govt. P.G. College Mahindergarh

Haryana

Lesson Plan

Session 2025-2026

Subject: Mathematics.

Semester: 3rd **B.A. 2nd SEC 3**

Subject code= SEC- MAT-

No. Of Week	Section Name	Topics
1.	Section A:	Linear Equations, Quadratic equations.
2.	Section A: Cont.	System of algebraic equations in two variables and their applications in simple problems.
3.	Section A: Cont.	Problems on ages, Clocks
4.	Section B : Cont.	Time and distance: Problems based on trains, Boats and Streams.
5	Section B:	Pipes and Cistern.
6.	Section B:	Work and time: Problems on work and time, Work and wages.
7.	Section C:	Simple interest, Compound Interest, Partnership.
8.	Section C: Cont.	Basic idea of set theory to solve practical problems.
9.	Section C :	Trigonometric ratios and identities, Height and distance.
10.	Section D	Basic idea of Permutations and Combinations. Events and sample space.
11	Section D: Cont.	Probability. Data interpretation: Raw and grouped data
12	Section D:	Bar Graph, Pie Chart, Mean, Median and Mode

Followed by
Dr. Sandeep kumari
Assistant Prof. Department. Of Mathematics
Govt. P.G. College Mahindergarh