

Lesson Plan

Name of the Assistant/ Associate Professor: Anuja Yadav..... Sem...^{2nd}.....

Class and Section: B.Sc./B.A. 1st

Subject: Number Theory & Trigonometry

Month	Topics
31 st January 2023	Introduction of Divisibility.
01 st February to 28 th February 2023	G.C.D, L.C.M, Primes, Fundamental Theorem of Arithmetic, Linear Congruences, Fermat's theorem. Wilson's theorem and it's converse, Linear Diophantine equations in two variables. Class Test
1 st March to 31 st March 2023	Complete Residue System and Reduced System modulo m , Euler ϕ function, Euler's generalization of Fermat's theorem, Chinese Remainder Theorem, Quadratic Residues, Legendre Symbols, Lemma of Gauss; Gauss Reciprocity law, greatest integer function $[x]$. The number of divisor and the sum of divisors of a number n [$d(n)$ & $\sigma(n)$]. Moebius Function & Moebius Inversion Formula. Class Test
1 st April to 30 April 2023	De-Moivre's theorem and it's applications, Expansion of trigonometrical functions. Direct circular and hyperbolic functions and their properties, Class Test
1 st May to 08 th May 2023	Inverse circular and hyperbolic function and their properties, logarithm of a complex quantity, Gregory's series, Summation of Trigonometric series, Class Test Assignment

Anuja Yadav
Teacher's Signature

Lesson Plan

Name of the Assistant/ Associate Professor: ..Anuja Yadav..... Sem.....2nd.....

Class and Section: B.Sc./B.A. 1st year Subject: Vector Calculus

Month	Topics
31 st January 2023	Scalar and Vector product of three vectors,
01 st February to 28 th February 2023	Product of Four vectors, Reciprocal vectors. Vector differentiation, Scalar valued point functions, Vector. valued point functions, derivative along a curve, directional derivatives. Class Test
1 st March to 31 st March 2023	Gradient of a scalar point function, geometrical interpretation of grad ϕ , Character of gradient as a point function. Divergence and curl of vector point function, characters of $\text{div } \vec{F}$ and $\text{curl } \vec{F}$ as point function, examples, Gradient, divergence and curl of sums and product and their related vector identities, Class Test
1 st April to 30 April 2023	Laplacian operator, Orthogonal curvilinear co-ordinates. Conditions for orthogonality, Fundamental triad of mutually orthogonal unit vectors. Gradient, divergence, curl & Laplacian operators in terms of orthogonal curvilinear co-ordinates, Class Test
1 st May to 08 th May 2023	Spherical co-ordinates. Vector integration, line integral, surface integral, Volume Integral, Theorem of Gauss, Green, Stokes and problems based on these. Class Test, Assignment

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Lesson Plan

Name of the Assistant/ Associate Professor: Sushma Yadav Sem...2nd

Class and Section: B.A.^{1st} / B.Sc. Ist

Subject: O.D.E (Mathematics)

Month	Topics
31 st January 2023	Differential Equation, Exact differential Eq ⁿ
01 st February to 28 th February 2023	Rules for finding the integrating factors Equation Solvable for P, equations solvable for Y. P-Discriminant and C-Discriminant, examples Test of ch-1 & 2 Orthogonal Trajectories
1 st March to 31 st March 2023	Orthogonal Trajectories in Polar coordinates Examples Test of ch-3 The Differential operator D, Auxiliary Eq ⁿ
1 st April to 30 April 2023	Meaning of the symbol $\frac{1}{f(D)}$ Examples Homogeneous Linear Equations, Examples Test of ch-4 & 5
1 st May to 08 th May 2023	Linear Differential Equations of Second order Examples Ordinary Simultaneous Differential Equations Examples Test of ch-7-8

Sushma
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Lesson Plan

Name of the Assistant/ Associate Professor: ..Anuja Yadav..... Sem.....4th

Class and Section: ..B.Sc + B.A. 2nd year Subject: ..Sequences and Series

Month	Topics
17 th January to 31 st January 2023	Boundedness of the set of real numbers, least upper bound, greatest lower bound of a set neighbourhood, interior point, isolated points, limit points, open set, closed set
01 st February to 28 th February 2023	Interior of a set, closure of a set in real numbers and their properties, Bolzano-Weierstrass theorem, open covers, Compact sets, and Heine-Borel theorem. Sequence: Real sequences and their convergence, Theorems on limits of sequence, Bounded and monotonic sequences, Cauchy's sequence, Class Test
1 st March to 31 st 2023	Cauchy general principle of convergence, Subsequence, Subsequential limits. Infinite Series: Convergence and divergence of infinite series, Comparison tests of positive terms infinite series, Cauchy's general principle of convergence of series, Convergence and divergence of geometric series. Class Test
1 st April to 30 April 2023	Hyper Harmonic series or p-series Infinite series: D'Alembert's Ratio test, Raabe's test, Logarithmic test, de Morgan and Bertrand's test, Cauchy's nth root test, Gauss test, Cauchy's integral test, Cauchy's condensation test Class Test
1 st May to 08 th May 2023	Alternating series: Leibnitz's test, absolute and conditional convergence Arbitrary series: Abel's Lemma, Abel's test, Dirichlet's test, Insertion and removal of parenthesis, re-arrangement of terms in a series, Dirichlet's theorem, Riemann's Re-arrangement theorem. Pringsheim's theorem (Statement only) Multiplication of series Cauchy product of series, Convergence & absolute convergence of infinite products, Class Test, Assignment

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Lesson Plan

Name of the Assistant/ Associate Professor: Sushma Yadav Sem. 4th

Class and Section: B.A./B.Sc 2nd year Subject: Special funⁿ & I.T (Mathematics)

Month	Topics
17 th January to 31 st January 2023	Convergence of Power Series, Analytic fun ⁿ Examples Test of ch-1
01 st February to 28 th February 2023	Beta fun ⁿ , Sol ⁿ of Bessel's fun ⁿ Examples, orthogonality Relation of Bessel's Function, Examples Sol ⁿ of Legendre's eq ⁿ , Examples Test of ch-2 & 3
1 st March to 31 st March 2023	Hermit's Equation, Examples Laplace Transforms, Examples Inverse Laplace Transforms, Examples Test of ch-4 & 5 & 6
1 st April to 30 April 2023	Use of Laplace Transforms in integral Equations Examples Fourier Transforms, Examples Test of ch-7, 8, 9
1 st May to 08 th May 2023	Solution of Differential Equations by Fourier Transforms Examples Test ch-10

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Lesson Plan

Name of the Assistant/ Associate Professor: Anuja Yadav..... Sem...6th.....

Class and Section: B.Sc./B.A 3rd year Subject: Real Analysis.

Month	Topics
17 th January to 31 st January 2023	Jacobians, Beta and Gamma function, Double and Triple integrals, Dirichlet's integrals
01 st February to 28 th February 2023	Change of order of integration in double integrals, Fourier's series: Fourier expansion of piecewise monotonic functions, Properties of Fourier Coeffs. Dirichlet's conditions, Parseval's identity for Fourier series, Class Test
1 st March to 31 st March 2023	Fourier series for even and odd functions, Half range series, Change of intervals. Extended Complex Plane, Stereographic projection of complex numbers, continuity and differentiability of complex functions, Class Test
1 st April to 30 April 2023	Analytic functions, Cauchy Riemann equations. Harmonic functions. Mappings by elementary function: Translation, Rotation, Magnification and Inversion, Class Test
1 st May to 08 th May 2023	Conformal Mapping, Mobius transformation, Fixed point, Cross ratio, Inverse Points and Critical mappings. Class Test Assignment

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Lesson Plan

Name of the Assistant/ Associate Professor: Sushma Yadav Sem. 6th

Class and Section: B.A./B.Sc. 3rd year Subject: Linear Algebra (Mathematics)

Month	Topics
17 th January to 31 st January 2023	Vector Space and Subspaces Theorems and Examples Test of ch - 1 st
01 st February to 28 th February 2023	Linear Dependence and independence of Vectors. Examples, Theorems Basis, Theorems & Examples Dimension, T^n & Examples Test ch - 2 nd
1 st March to 31 st March 2023	Quotient Space, Linear Transforms Examples Algebra of Linear Transforms Examples & Theorems Test of ch - 3, 4 & 5 th
1 st April to 30 April 2023	Matrix of Linear Transformation Theorem & Examples Dual Space, Examples Test of ch - 6 th & 7 th & 8 th
1 st May to 08 th May 2023	Eigen values and Eigen vectors Theorems & Examples Inner Product Space, Examples Test

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