

Lesson Plan

Name of College : **Government College for Women, Shahzadpur (Ambala)**

Academic Session : **(2022-23)**

Class : **B.Sc. VIth Sem**

Paper : **BM -361: REAL & COMPLEX ANALYSIS**

Teacher's Name : **Aarti Saini**

Month	Dates	Topic to be covered	Academic/ Activity to be organized	Assignments/ Tests
February	1-8	Jacobians		Test
	9-15	Beta and Gama functions		Test
	16-22	Double and Triple integrals, Dirichlets integrals		
	22-28	change of order of integration in double integrals		Test
March	1-4	Fourier expansion of piecewise monotonic functions		Assignment
	13-18	Properties of Fourier Co-efficients, Dirichlet's conditions		
	20-25	Parseval's identity for Fourier series, Fourier series for even and odd functions		Test
	27-31	Half range series, Change of Intervals		
April	1-7	Extended Complex Plane, Stereographic projection of complex numbers		Assignment
	8-14	continuity and differentiability of complex functions		
	15-22	Analytic functions, Cauchy-Riemann equations		Test
	24-30	Harmonic functions, Translation, rotation,		Test
May	1-5	Magnification and Inversion. Conformal Mappings		Test
	6-12	Mobius transformations. Fixed points		
	13-18	Cross ratio, Inverse Points		Test
	19-24	critical mappings		Test

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Name of College : **Government College for Women, Shahzadpur (Ambala)**

Academic Session : **(2022-23)**

Class : **B.Sc. 4th Sem**

Paper : **BM -241: SEQUENCES AND SERIES**

Teacher's Name : **Aarti Saini**

Month	Dates	Topic to be covered	Academic/ Activity to be organized	Assignments/ Tests
February	1-8	Boundedness of the set of real numbers; least upper bound, greatest lower bound of a set, neighborhoods, interior points		
	9-15	isolated points, limit points, open sets, closed set, interior of a set		Test
	16-22	closure of a set in real numbers and their properties. Bolzano- Weiestrass theorem		
	22-28	Open covers, Compact sets and Heine-Borel Theorem		Test
March	1-4	Real Sequences and their convergence, Theorem on limits of sequence		Assignment
	13-18	Bounded and monotonic sequences, Cauchy's sequence		
	20-25	Cauchy general principle of convergence, Subsequences, Subsequential limits		
	27-31	Convergence and divergence of Infinite Series, Comparison Tests of positive terms Infinite series		Test
April	1-7	Cauchy's general principle of Convergence of series, Convergence and divergence of geometric series		
	8-14	Hyper Harmonic series or p-series, D-Alembert's ratio test, Raabe's test		Assignment
	15-22	Logarithmic test, de Morgan and Bertrand's test, Cauchy's Nth root test, Gauss Test,		Test
	24-30	Cauchy's integral test, Cauchy's condensation test, Alternating series		
May	1-5	Leibnitz's test, absolute and conditional convergence, abel's lemma		
	6-12	Abel's test, Dirichlet's test,		Test
	13-18	Insertion and removal of parenthesis, rearrangement of terms in a series, Dirichlet's theorem, Riemann's Rearrangement theorem		
	19-24	Multiplication of series, Cauchy product of series		Test

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Name of College : **Government College for Women, Shahzadpur (Ambala)**

Academic Session : **(2022-23)**

Class : **B.Sc. IVth Sem**

Paper : **BM -242: Special Functions and Integral Transforms**

Teacher's Name : **Aarti Saini**

Month	Dates	Topic to be covered	Academic/ Activity to be organized	Assignments/ Tests
February	1-8	Laplace Transforms – Existence theorem for Laplace transforms, Linearity of the Laplace transforms, Shifting theorems		
	9-15	Laplace transforms of derivatives and integrals, Differentiation and integration of Laplace transforms		Test
	16-22	Convolution theorem, Inverse Laplace transforms, convolution theorem, Inverse Laplace transforms of derivatives and integrals		Test
	22-28	solution of ordinary differential equations using Laplace transform		
March	1-4	Series solution of differential equations – Power series method		
	13-18	Series solution of differential equations – Power series method		Test
	20-25	Definitions of Beta and Gamma functions. Bessel equation and its solution		
	27-31	Bessel functions and their properties- Convergence, recurrence, Relations and generating functions, Orthogonality of Bessel functions.		Assignment
April	1-7	Legendre and Hermite differential equations and their solutions		Test
	8-14	Legendre and Hermite functions and their properties-Recurrence Relations and generating functions.		
	15-22	Orthogonality of Legendre and Hermite polynomials, Rodrigues' Formula for Legendre & Hermite Polynomials,		Test
	24-30	Laplace Integral Representation of Legendre polynomial. Fourier transforms: Linearity property		
May	1-5	Shifting, Modulation, Convolution Theorem		Assignment

	6-12	Fourier Transform of Derivatives, Relations between Fourier transform and Laplace transform,		
	13-18	Parseval's identity for Fourier transforms		Test
	19-24	solution of differential Equations using Fourier Transforms.		Test

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Name of College : **Government College for Women, Shahzadpur (Ambala)**

Academic Session : **(2022-23)**

Class : B.Sc. 2nd Sem

Paper : BM – 123 : Vector Calculus

Teacher's Name : **Aarti Saini**

Month	Dates	Topic to be covered	Academic/ Activity to be organized	Assignments/ Tests
February	1-8	Scalar and vector product of three vectors		
	9-15	product of four vectors. Reciprocal vectors.		
	16-22	Vector differentiation Scalar Valued point functions, vector valued point functions		Test
	22-28	derivative along a curve, directional derivatives		
March	1-4	Gradient of a scalar point function, geometrical interpretation of grad F		
	13-18	character of gradient as a point function. Divergence and curl of vector point function		Test
	20-25	characters of Div f and Curl f as point function		
	27-31	Gradient, divergence and curl of sums and product and their related vector identities. Laplacian operator		Assignment
April	1-7	Orthogonal curvilinear coordinates		Test
	8-14	Conditions for orthogonality fundamental triad of mutually orthogonal unit vectors.		
	15-22	Gradient, Divergence, Curl and Laplacian operators in terms of orthogonal curvilinear coordinates		Test
	24-30	Cylindrical co-ordinates and Spherical coordinates.		
May	1-5	Vector integration; Line integral		Assignment
	6-12	Surface integral		
	13-18	Volume integral		Test
	19-24	Theorems of Gauss, Green & Stokes and problems based on these theorems		Test

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