Lesson Plan

Class: B.A/B.Sc. 4th Semester

Paper: Special Functions and Integral Transforms/ N.A

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| Month | Syllabus to be Covered |
| April | Laplace Transforms – Existence theorem for Laplace transforms, Linearity of the Laplace transforms, Shifting theorems, Laplace transforms of derivatives and integrals, Differentiation and integration of Laplace transforms, Convolution theorem, Inverse Laplace transforms, convolution theorem, Inverse Laplace transforms of derivatives and integrals, solution of ordinary differential equations using Laplace transform. |
| May | Fourier transforms: Linearity property, Shifting, Modulation, Convolution Theorem, and Fourier Transform of Derivatives, Relations between Fourier transform and Laplace transform, Parseval’s identity for Fourier transforms, solution of differential Equations using Fourier Transforms. Simultaneous linear algebraic equations: Gauss-elimination method, Gauss-Jordan method, Triangularization method (LU decomposition method). Crout’s method, Cholesky Decomposition method. Iterative method, Jacobi’s method, Gauss-Seidal’s method, |
| June, July | Series solution of differential equations – Power series method, Definitions of Beta and Gamma functions. Bessel equation and its solution: Bessel functions and their propertiesConvergence, recurrence, Relations and generating functions, Orthogonality of Bessel functions. Legendre and Hermite differentials equations and their solutions: Legendre and Hermite functions and their properties-Recurrence Relations and generating functions. Orhogonality of Legendre and Hermite polynomials. Rodrigues’ Formula for Legendre &Hermite Polynomials, Laplace Integral Representation of Legendre polynomial. |

Lesson Plan

Class: B.A/B.Sc. 6th Semester

Paper: LINEAR ALGEBRA/Dynamics

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| Month | Syllabus to be Covered |
| April | Vector spaces, subspaces, Sum and Direct sum of subspaces, Linear span, Linearly Independent and dependent subsets of a vector space. Finitely generated vector space, Existence theorem for basis of a finitely generated vector space, Finite dimensional vector spaces, Invariance of the number of elements of bases sets, Dimensions, Quotient space and its dimension. Velocity and acceleration along radial, transverse, tangential and normal directions. |
| May | Homomorphism and isomorphism of vector spaces, Linear transformations and linear forms on vector spaces, Vector space of all the linear transformations Dual Spaces, Bidual spaces, annihilator of subspaces of finite dimensional vector spaces, Null Space, Range space of a linear transformation, Rank and Nullity Theorem, Algebra of Liner Transformation, Minimal Polynomial of a linear transformation, Singular and non-singular linear transformations . Matrix of a linear Transformation, Change of basis, Eigen values and Eigen vectors of linear transformations. Relative velocity and acceleration. Simple harmonic motion. Elastic strings |
| June | Inner product spaces, Cauchy-Schwarz inequality, Orthogonal vectors, Orthogonal complements, Orthogonal sets and Basis, Bessel’s inequality for finite dimensional vector spaces, Gram-Schmidt, Orthogonalization process, Adjoint of a linear transformation and its properties, Unitary linear transformations Mass, Momentum and Force. Newton’s laws of motion. Work, Power and Energy. Definitions of Conservative forces and Impulsive forces |

Lesson Plan

Class: B.CA 4th Semester

Paper: Computer Oriented Statistical Methods

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| Month | Syllabus to be Covered |
| April | Basic Statistics: Preparing Frequency Distribution Table and Cumulative frequency, Measure of Central Tendency, Types: Arithmetic mean, Geometric Mean, Harmonic Mean, Median, Mode. Measure of Dispersion: Range, Quartile Deviation, mean deviation, Coefficient of mean Deviation, Standard Deviation Moments : Moments About mean, Moments about any point, Moment about origin, Moment about mean in terms of moment about any point, Moment about any point in terms of Moment about mean. |
| May | Probability Distribution: Random Variable- Discrete Random and Continuous Random variable, Probability Distribution of a RandomVariable,MathematicalExpectation Types: Binomial, Poisson, Normal Distribution, Mean and Variance of Binomial, Poisson, and Normal Distribution. Correlation: Introduction, Types, Properties, Methods of Correlation: Karl Pearson’s Coefficient of Correlation, Rank Correlation and Concurrent Deviation method, Probable error. Regression: Introduction, Aim of Regression Analysis, Types ofRegression Analysis, Lines of Regression, Properties of Regression Coefficient and Regression Lines, Comparison with Correlation. |
| June,July | Curve Fitting: Straight Line, Parabolic curve, Geometric Curveand Exponentia CurveBaye’s Theorem in Decision Making, Forecasting Techniques Sample introduction, Sampling: Meaning, methods of Sampling, Statistical Inference: Test of Hypothesis,Typesofhypothesis, Procedure of hypothesis Testing, Type I and Type II error, One Tailed and two tailed Test, Types of test of Significance: Test of significance for Attribute-Test of No. of success and testofproportionofsuccess, Test of significance for large samples - Test of significance for single mean and Difference of mean, Test of significance for small samples( t-test) – test the significance between the meanofarandomsample, between the mean of two independent samples |