MATHEMATICS FOR CIVIL ENGINEERS

1.5-0-0-0-5

Linear Differential Equations: Homogeneous Linear Equations of Second Order; Second Order Homogeneous Equations with Constant Coefficients; Case of Complex Roots, Complex Exponential Function; Nonhomogeneous Equations; Solution by Undetermined Coefficients; Solution by Variation of Parameters Fourier Integrals and Transforms: Fourier Integrals; Fourier Cosine and Sine Transforms; Fourier Transform andProperties; Dirac Delta Function; Convolution Theorem; Parseval's Theorem; Fourier integral to Laplace transform Partial Deerential Equations: Basic Concepts; Modeling: Vibrating String, Wave Equation; Separation of Variables,Use of Fourier Series; Modeling: Membrane, Two Dimensional Wave Equation; Rectangular Membrane, Use ofDouble Fourier SeriesLinear Algebra: Rank of a Matrix, Linear Independence, Vector Space; Solutions of Linear Systems: Existence,Uniqueness, General Form; Vector Spaces, Inner Product Spaces, Linear Transformations; Eigenvalues,Eigenvectors; Similarity of Matrices, Basis of Eigenvectors, Diagonalization