NPTEL Video Course - Mathematics - NOC:Mathematical Methods for Boundary Value Problems

Subject Co-ordinator - Prof. Somnath Bhattacharyya

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Strum-Liouville Problems, Linear BVP
Lecture 2 - Strum-Liouville Problems, Linear BVP (Continued...)
Lecture 3 - Solution of BVPs by Eigen function expansion
Lecture 4 - Solution of BVPs by Eigen function expansion (Continued...)
Lecture 5 - Solutions of linear parabolic, hyperbolic and elliptic PDEs with finite domain by Eigen function
Lecture 6 - Solutions of linear parabolic, hyperbolic and elliptic PDEs with finite domain by Eigen function
Lecture 7 - Green's Function for BVP and Dirichlet Problem
Lecture 8 - Green's Function for BVP and Dirichlet Problem (Continued...)
Lecture 9 - Numerical Techniques for IVP; Shooting Method for BVP
Lecture 10 - Numerical Techniques for IVP; Shooting Method for BVP (Continued...)
Lecture 11 - Finite difference methods for linear BVP; Thomas Algorithm
Lecture 12 - Finite difference methods for linear BVP; Thomas Algorithm (Continued...)
Lecture 13 - Finite difference method for Higher-order BVP; Block tri-diagonal System
Lecture 14 - Finite difference method for Higher-order BVP; Block tri-diagonal System (Continued...)
Lecture 15 - Iterative methods for nonlinear BVP; Control volume formulation
Lecture 16 - Iterative methods for nonlinear BVP; Control volume formulation (Continued...)
Lecture 17 - Implicit scheme; Truncation error; Crank-Nicolson scheme
Lecture 18 - Implicit scheme; Truncation error; Crank-Nicolson scheme (Continued...)
Lecture 19 - Stability analysis of numerical schemes
Lecture 20 - Alternating-Direction-Implicit Scheme; Successive-Over-Relaxation technique for Poisson equation