Scientific Computing for Engineers

Faculty:

Dr. Phani Motamarri
Dept. of Computational and Data Sciences, IISc Bangalore

Dr. Aditya Konduri
Dept. of Computational and Data Sciences, IISc Bangalore

Who Can apply?

Any Engineering College faculty/practicing engineers/R&D Engineers

Pre-requisites required: Basic Linear Algebra, Preliminary knowledge of differential equations

Course Schedule: 16,17,18,19 June 2023

Course Mode: Hybrid (Offline and Online using zoom) Physical Participants : 30
Online Participants : 50

Course Fee: Rs. 15,000/- + 18% GST

Objectives

The course "Scientific Computing for Engineers" is geared towards training NIT faculty on the foundational topics in computational sciences and data sciences, which is required for teaching students from all branches of engineering at NITs.

Syllabus

Computational Linear Algebra:
Vectors, Vector norms, Matrices, Matrix-vector multiplications, Linear independence of vectors, basis, Matrix-matrix multiplications, singular value decomposition (applications to principal component analysis, image compression), orthogonalization of vectors, least squares, eigenvalue problems.

Numerical Solution of Differential equations:
Ordinary differential equations: error analysis, stability and convergence, Euler and Runge-Kutta methods, multistep methods, Adams-Bashforth and Adams-Moulton methods, predictor-corrector methods. Partial differential equations: classification, elliptic, parabolic and hyperbolic PDEs, Dirichlet, Neumann and mixed boundary value problems. Numerical solution of PDEs: relaxation methods for elliptic PDEs, Crank-Nicholson method for parabolic PDEs, Lax-Wendroff method for hyperbolic PDEs. Introduction to finite element method.

This course can be attended only by registration.
Registration will be accepted on first-come first-serve basis.

On campus accommodations at the Hoysala Guesthouse are available (on payment basis) additional charge of 1000 Rs per day

Registration Deadline: 6th June 2023

Registration link

https://iisc.online/shortterm/home.html