

Joint Online Two Weeks Certificate Faculty Development Program

Jointly Organized by:

Numerical & Engineering Computation, Optimization for Physicists,
Scientists & Engineers - Open Source SCILAB

NIT Patna,
IIT Kanpur,
MNIT Jaipur,
PDPM IITDM
Jabalpur.



October 04-15, 2021

Principal Coordinator: E&ICTA, NIT Patna

Objective & Scope

The course gives the insight about the numerical & engineering computation and optimization using the open sources.

Joint-Principal Coordinators

1. Dr. Bharat Gupta (bharat@nitp.ac.in),
Principal Coordinator, EICTA, NITP

2. Dr. Rakesh Ranjan (rr@nitp.ac.in),
Joint-Principal Coordinator, ECED, NITP

Course Contents

- Solving set of equations- Perform computations like matrix, vectors; Gaussian elimination & iterative methods, ill-conditioned systems, iterative methods; nonlinear equations
- Large Matrix analysis and large Eigen value problem- Eigenvalues & eigen vectors- Gerschgorin theorem, iterative method, Sturm sequence, QR method, Singular value problems
- Random numbers Simulation & Applications
- Open source & traditional technical computing
- Solving ordinary differential equations (ODE); plotting 2D and 3D plots; diagram creation
- Xcos- Model based simulations using Xcos.
- Introduction to Discrete Probabilities with Scilab
- Introduction to constrained and un-constrained optimization; optimality conditions.
- Writing functions in Scilab and scripting
- Building an interactive GUI
- Linear algebraic equations, fast computation, Pade & rational approximation
- Numerical approximations of functions - Taylor's polynomial, least square approximation, Chebyshev series/polynomial, splines,
- Fourier coefficients, Fourier series, trigonometric interpolation, DFT, FFT; Compression
- Application development; Industry real time Use Cases

Speakers (Tentative)

- Experts from ESI India.
- Experts from IITs, NITs, etc.

Key Features

- Online / Live lectures sessions by subject experts.
- Comprehensive tutorials and practice notes.
- Online lab and training sessions.
- Follow up sessions and discussion forums on research problems and internships.

Course Fee Details

Academic (student/faculty): 500 INR
Industry People/Others: 1000 INR
Foreign Participants: 4000 INR

Online payment details:

Bank Name: Indian Bank (Earlier Allahabad Bank)

Account Name: NIT Patna

Account No.: 50380476798

IFSC Code: IDIB000B810

Last Date for registration: October 01
2021

Link for registration: <https://forms.gle/RewMBc1LizRHNZDG9>

For more details and application form visit:

<http://www.nitp.ac.in/ict/numerical&computation.php>

Email: eictapatna@nitp.ac.in, bharat@nitp.ac.in, rr@nitp.ac.in

Contact No.: +91-93314-06964, +91-93343-85016