



ONLINE/CLASSROOM FDP
on
**Numerical Methods, Computation, and
Optimization using C and MATLAB
Programming Language**

(9th -13th June 2025)



**Chairman, EICT Academy &
Director MNIT Jaipur**

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**Objective (Electronics & ICT
Academy-Phase II)**

1) To conduct specialized FDPs for faculty/mentor training in line with the vision of MeitY by promoting emerging areas of technology and other high-priority areas that are pillars of both the "Make in India" and the "Digital India" programs.

2) To promote synergy and collaboration with industry, academia, universities and other institutions of learning, especially in emerging technology areas.

3) To support the National Policy on Electronics 2019 (NPE 2019) which envisions positioning India as a global hub for ESDM sector, including MeitY Schemes/policies such as Programme for Semiconductors and Display Fab Ecosystem; India AI; National Programme on AI, Production Linked Incentive Scheme for IT Hardware & Large-Scale Electronics Manufacturing; EMC; SPECS; Chips to System (C2S); etc.

4) To promote standardization of FDPs through Joint Faculty Development Programmes.

5) To support the vision of the National Education Policy (NEP 2020), which mandates that Indian educators go through at least 50 hours in professional development programmes per year.

6) To design, develop & deliver specialised FDPs on emerging technologies/ niche areas/ specialised modules for specific research areas for Faculty in Higher Education Institutions

(HEI), besides FDPs on multi-disciplinary areas connected with ICT tools and technologies and other digital hybrid domains, covering a wide spectrum of engineering and non-engineering colleges, polytechnics, ITIs, and PGT educators.

An intensive 40 Hour Faculty Development Programme in Hybrid mode is being organized for faculty of engineering and technological institutions. It is also open to persons from industry and doctoral students of Indian organizations. The main theme of training program will be oriented around exploring the state of the art methods for numerical methods, computation and optimization using C and MATLAB programming language.

Experts/Speakers (Tentative)

1) Prof. Vipul Rastaugi, IIT Roorkee	7) Prof. K. K Sharma, SA University, New Delhi
2) Prof. Mani Mehra, IIT Delhi	8) Prof. Sarvesh Kumar, IIST Thiruvananthapuram
3) Prof. Shruti Dubey, IIT Madras	9) Prof. Manoj Thakur, IIT Mandi
4) Prof. Jeetendra Kumar, IIT Ropar	10) Prof. Shiv Gupta, IIT Roorkee
5) Prof. Vikas Gupta, LNMIIT Jaipur	11) Prof. Rahul Singhal, MNIT Jaipur
6) Prof. Ashish Awasthi, NIT Calicut	12) Prof. Ritesh K Dubey, SRMIST Chennai

Programme Modules:

Module 1: NUMERICAL METHODS : Mathematical preliminaries, error analysis, root finding techniques, system of linear equations, system of non-linear equations, Polynomial interpolation, Piecewise polynomial interpolation, spline interpolation, Numerical differentiation and integration

Module 2: MATLAB PROGRAMMING : Interactive computation, Writing scripts and functions, loops and conditional statements, root finding, interpolation and extrapolation, matrices, numerical integration, simulations and random numbers, 2D and 3D plots

Module 3: NUMERICAL METHODS for ODE and PDE: Initial value problems, Predictor-corrector methods, Stability, Truncation error, Runge-Kutta method, Linear boundary value problem, Introduction to Finite Difference Method. Parabolic equations in 1-D: Explicit and implicit finite difference schemes, Truncation error and consistency, Stability analysis (matrix method, maximum principle, Von-Neumann stability analysis method), Maximum principle and convergence, Lax equivalence theorem, general boundary conditions, split operator methods, multilevel difference schemes,

Module 4: OPTIMIZATION TECHNIQUES: Direct Search Methods, Gradient Based methods, Simplex Method and Linear Programming, Integer Linear Programming, Non-Linear Optimization, Mixed Integer Non-Linear Programming, Genetic Algorithm, Particle Swarm Optimization, Differential Evolution, Neural Network and its Applications.

Simulation/ Labrotary : Software : C and Matlab programming on discussed numerical schemes for ODE and PDE, and on discussed optimization algorithms

Programme Coordinators:

Dr. Rahul Singhal, MNIT Jaipur	rsinghal.phy@mnit.ac.in	9549654378 (M)
Dr. K. V. Kamma, MNIT Jaipur	kvkamma.phy@mnit.ac.in	9549654377 (M)
Prof. Vikas Gupta, LNMIIT Jaipur	vikasg@lnmiit.ac.in	7976531161 (M)

Registration:

Registration is open to faculty, working professionals, industry persons, doctoral, postgraduate and graduate students. Participants will be admitted on first-come first-served basis.

Register online at-

(<http://online.mnit.ac.in/eict/>)



Certification Fee

	Online	Classroom
From Academia (faculty/PhD scholars):	500/-	3000/-
Working professionals, Industry, research-staff/technical staff/students & Others	1500/-	4000/-

(A) Fee once paid will not be refunded back.

(B) The fee covers participation in the programme, tutorial notes and examination, certification charges & food charges (classroom only)

(C) The organizers should receive the registration amount through online mode-NEFT/UPI, provided at the registration portal.

(D) Detailed schedule will be shared after receiving registration form.

→ For any other query, email us at fdp.academy@mnit.ac.in, academy@mnit.ac.in

MNIT Jaipur one of the oldest NITs, the institute has a rich heritage of sixty years producing world class engineers, managers, architects and scientists. Ranked 43rd nationally in the NIRF ranking-2024 (Engineering), the institute offers learning opportunities for undergraduate, postgraduate students, and researchers in various domains. Having a lush green campus of over 317 acres within the heart of the pink city, close to Jaipur International Airport, the campus offers a safe and lively environment. A world class teaching infrastructure, state-of-art laboratories welcome you at the campus. The institute has a vision to impart education of international standards and conduct research at the cutting edge of technology.