

MALAVIYA MISSION TEACHER TRAINING CENTRE
INDIAN INSTITUTE OF TECHNOLOGY MANDI

ज्ञान-विज्ञान विमुक्तये

MALAVIYA MISSION SCHEME
TEACHER'S
TRAINING PROGRAMME

Starting Date: 14th December 2026
Ending Date: 19th December 2026
Last Application Date: 07th December 2026

FACULTY DEVELOPMENT PROGRAM ON

Multiphysics Finite Element Method and Physics-Informed Neural Networks (PINNs)

MODE	DURATION	ORGANIZER
RESIDENTIAL	6 Days	IIT MANDI

About the Course –

The Faculty Development Programme on "Multiphysics Finite Element Method (FEM) and Physics-Informed Neural Networks (PINNs)" is designed to provide participants with a comprehensive understanding of numerical modeling, scientific machine learning, and acceleration strategies for engineering systems involving coupled physical phenomena. The course emphasizes both classical theoretical foundations of FEM as well as modern physics-informed deep learning techniques for coupled multi-field problems.

Participants will first explore the governing equations of interacting physical domains—such as thermo-structural mechanics, fluid–structure interaction, electro-thermal systems, and piezoelectric coupling—and learn to formulate them using both sequential and monolithic FEM frameworks. The first part of the course builds strong conceptual clarity in discretization, matrix assembly, and boundary conditions, while addressing the severe computational time constraints and memory bottlenecks associated with traditional Multiphysics FEM in high-fidelity or real-time design scenarios.

The second part of the course introduces Physics-Informed Neural Networks (PINNs) as a powerful mesh-free surrogate solver to overcome these computational limitations. Through expert lectures and guided hands-on lab sessions, participants will learn how to embed physical laws, boundary conditions, and material constitutive relations directly into neural network loss functions using automatic differentiation. Case studies drawn from real-world engineering applications will illustrate forward modeling, parameter estimation, and comparative trade-offs between FEM and PINNs. By the end of the programme, participants will be able to model, analyze, and accelerate multiphysics solutions using both numerical and scientific AI approaches in teaching, research, and advanced engineering practice.

Participants Eligibility Criteria –

Faculty members working in universities and colleges that are included under Section 2(f) of the UGC Act. The teachers of colleges that do not yet come within the purview of Section 2(f), but have been affiliated to a university for at least three years, will be permitted to participate in the courses. These conditions are applicable only for Residential Training Programmes/Courses.

Salient Features of the Course –

1. The FDP will be of **6 working days and 36 contact hours (six hours a day, six days a week).**

2. The course consists of **24 expert lectures**, along with discussions, illustrative sessions, academic interactions, hands-on session, project work, and other learning activities.

3. Participant evaluation will be conducted through MCQ-based assessments and presentations.

4. A Certificate will be issued to those who have attended all the sessions, qualified the Assessment examination and have submitted the project.

Important Dates –

Starting Date	Ending Date	Application Deadline Date
14th December 2026	**19th December 2026**	**07th December 2026**

NOTE –

1. No Registration Fees.
2. Fill the NOC in the prescribed format.
3. Attendance is mandatory in all the sessions.
4. Shared accommodation, working lunch and tea and snacks will be provided free of cost during the programme. Participants must use their own funds for travel-related expenses.

Course Coordinator-

Prof. Rajeev Kumar

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Programme Director-

Prof. Atul Dhar

MMTTC, Indian Institute of Technology Mandi (H.P)

MMTTC Contact Details-

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Registration Links –

MMTTP Website: Link

Step by Step Process: Link

NOC Format: Link