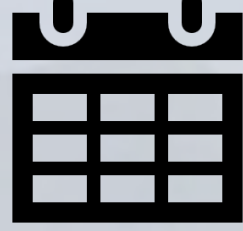


Winter School on STATISTICAL DATA ANALYTICS & DEEP LEARNING-V2

 2nd – 11th January 2026 (Hybrid Mode)

Learning in the mountains during Soothing Winters

This program is designed for scholars and working professionals from any discipline who possess a basic understanding of data analysis and deep learning. We have released the first version from June 23-27, 2025 with great success. This is version two with more extended and detailed topics; see the first version from the link: <https://research.iitmandi.ac.in/masterclass/>

Our goal is to provide a rigorous foundation in essential concepts, followed by an introduction to key application areas across diverse fields. The program will culminate in a hands-on, real-world project, enabling participants to apply their learning to practical challenges.

Key
Speakers
from

- SMSS Faculty, IIT Mandi
- Langley Research Center
NASA USA

Schedule

Module 1: Basics of Programming (needed for DL)

- Introduction to core libraries of Python, such as NumPy and Pandas
- Tensorflow for deep learning

Module 2: Basics of Probability & Statistics (Theory + Practicals)

- Basics of probability, random variables, and distributions
- Starting of a projects with industry relevance (this will undergo all 10 days of the workshop)

Module 3: Data Visualization

- Cases studies
- Different types of directionals plots

Module 4: Classification & Regression Statistical Techniques

- Linear and logistic regression fundamentals
- Regularization techniques (L1, L2)
- Model Evaluation & Validation (ROC, RMSE, F1 Score etc.)

Module 5: Fundamentals of Deep Learning

- Classification and Regression using Neural Networks
- Detailed understanding of components of NNs

Module 6: Core Architectures

- CNNs, ImageNet
- RNNs, LSTMs, and GRUs

Module 7: Transformers

- Transformers: BERT and GPT Overview
- Vision Transformers
- Attention Mechanisms: Seq2Seq, Encoder-Decoder

Module 8: Generative Models

- Autoencoders and Variational Autoencoders (VAE)
- Generative Adversarial Networks (GANs)

Module 9: Generative AIs and Explainability

- Large Language models (LLMs); GPT Family
- Generative AI in practice
- Explainable AI

Module 10: Application and Case Study

- Case Study (Projects): Predicting Rainfall / Air Pollution / Temperature

Registration

Fees

- Offline/Online (For IIT Mandi): INR 5000/-
 - Online: INR 8000/- | USD 200/- (foreign nationals)
 - Offline (Outside Students): INR 16000/-
 - Offline (Working Professionals): INR 24000/-
- (prices includes boarding and lodging)

Deadline

Expression of
Interest:

20/12/2025

Payment:

30/12/2025



<https://forms.gle/vKL2qffkDxz7aDhe8>

Target
Audience

- Research Scholars (M.Sc./M.Tech/PhD.)
- Working Professionals
- Data Enthusiasts

Organizers

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Indian Institute of Technology, Mandi**