

Skill Enhancement Program (SEP)-2023

Name of Department	Department of Information Technology
Module Name	Deep Learning – Basics to Advance
Module Coordinators	Dr. Punit Kumar Johari
Module Objective	Deep Learning is a subfield of machine learning concerned with algorithms inspired by the structure and function of the brain called artificial neural networks. A function imitates the workings of the human brain in processing data and creating patterns for use in decision-making. Learn Deep Learning, Transfer Learning and Neural Networks using the latest frameworks.
Module Content	<ul style="list-style-type: none"> • An Introduction to Deep Learning, Perceptron: Perceptron implementation using python, Python scripting & modular coding for Perceptron, Python logging basics and docstrings, Python packaging, Github actions, and PyPI. Multilayer Perceptron • Forward propagation • Why we need Activation function? • ANN implementation using tf.keras, ANN with Callbacks Tensorboard Early Stopping Model Checkpointing • Vector • Differentiation • Partial differentiation • Maxima and minima concept • Gradient descent basics • In-depth understanding of Gradient descent • Chain rule • Back propagation • General problems in training Neural Networks • Vanishing and Exploding gradients • Activation function basics • Weight initialization • Activation functions • Transfer learning • Batch normalization • Deep Learning Advance topics
Module Methodology	The module will start with theoretical concept of Neural Network,

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	Perceptron, Deep Learning concepts, Further, Various hands-on session has scheduled on various freeware software used in Deep Learning such as Python, keras, anaconda, Numpy, Tensorboard etc.
Module Outcome/ Impact	<ul style="list-style-type: none">• Understand the basic concepts of ANN, Deep Learning.• Identify the deep learning algorithms, which are more appropriate for various types of learning tasks in various domains.• Implement deep learning algorithms and solve real-world problems.
Duration	4 Weeks

Eligibility and Important Instructions:-

1. The Finishing School Program (Training/Internship) is designed only for Pre-final & Final Year students of all Departments.
2. The students may apply online.
3. The Finishing School Program/ Summer Internship Program is free for the participants of Pre-final & Final year students of MITS, Gwalior.
4. The participants outside the Institute may also join the Program on payment basis.
5. This module will be conducted under the Finishing School Program, which will be considered equivalent to Internship of Pre-final year students who could not get any Internship during this situation.
6. Duration of this program will be of four weeks that is equivalent to summer Internship period as per AICTE and our Institute policy. Daily no. of hours of online training may be flexible.
7. Certificates will be issued to candidates who have attendance 75% or more and score more than 60% in the test.