Course Name	**Deep learning Essentials**
Course Duration	2 Day (16 hours)
Target Audience	Data Scientist, ML Engineer, DL Engineer
Course Outcomes	Understand and apply neural networks with supervised learning.
	Learn vectorization for deep learning.
	Build and train single and multi-layer neural networks.
	Apply deep neural networks to real-world problems like image classification.

Module 01: Introduction to Neural Network	
1.1	Concept of Neural Network?
1.2	Supervised Learning with Neural Networks
Module 02: Logistic Regression using Neural Network	
2.1	Binary Classification
2.2	Logistic Regression
2.3	Logistic Regression Cost Function
2.4	Gradient Descent
2.5	Concepts of Derivatives
2.6	Derivatives with a Computation Graph
2.7	Logistic Regression Gradient Descent
2.8	Gradient Descent on m Examples
2.9	Derivation of DL/dz
Module 03: Python and Vectorization in Neural Network	
3.1	Concept of Vectorization
3.2	Vectorizing Logistic Regression
3.3	Vectorizing Logistic Regression's Gradient Output

3.4	Broadcasting in Python
3.5	Python/NumPy Vectors
3.6	Logistic Regression Cost Function
3.7	Exercises: Python Basics with NumPy
3.8	Exercises: Logistic Regression with Neural Network
Module 04: Single-Layer Neural Network (Shallow)	
4.1	Neural Networks Overview
4.2	Neural Network Representation
4.3	Computing a Neural Network's Output
4.4	Vectorizing Across Multiple Examples
4.6	Activation Functions
4.7	Need of Non-Linear Activation Functions
4.8	Derivatives of Activation Functions
4.9	Gradient Descent for Neural Networks
4.11	Backpropagation Intuition
4.12	Random Initialization
4.13	Exercises: Planar Data Classification with Single Hidden Layer
Module 05: Multi-Layer Neural Network (Deep)	
5.1	Deep L-layer Neural Network
5.2	Forward Propagation in a Deep Network
5.3	Getting your Matrix Dimensions Right
5.4	Deep Representations
5.5	Building Blocks of Deep Neural Networks
5.6	Forward and Backward Propagation
5.7	Parameters vs Hyperparameters
5.8	Exercises: Multi-Layer Neural Network Problem
Module 06: Applications of Deep Learning	
6.1	Project: Image Classification Problem