

**ITShare Company**

01122339966-01122339955

Mostafa@iteshare.com

# Machine Learning with Python

## Module 1: Introduction to Machine Learning

- Basics of Machine Learning
- What and why Machine Learning
- Applications of Machine Learning
- Types of Machine Learning
- Main Challenges of Machine Learning

## Module 2: Scikit Learn

- Introduction to Scikit Learn
- Features of Scikit-Learn
- CONVENTIONS
- IMPLEMENTATION STEPS

## Module 3: Linear Algebra

- Vectors (2D,3D)
- Dot Product
- Hyperplane
- Square, Rectangle
- Hypercube

## Module 4: Probability

- Data types and its measures
- Random Variables, its application with variables
- Probability-Application with examples
- Probability distribution with examples
- Sampling Funnel-why And how

## Module 5: Statistics

- WHAT IS STATISTICS
- BASIC TERMINOLOGIES IN STATISTICS
- TYPES OF STATISTICS
- DESCRIPTIVE STATISTICS
- MEASURE OF CENTRAL TENDENCY ( Mean, median, mode )
- Measures of dispersion ( Variance,Standard Deviation,Range-its derivation )
- Measures of Skewness & kurtosis
- INFERENCE STATISTICS

## Module 6: Data pre-processing

- Is your data clean?
- What is Data Pre processing ?
- Data cleaning techniques
- 

## Module 7: Exploratory Data Analysis (EDA)

- Introduction
- 2D Scatter-plot
- 3D Scatter-plot
- Pair plots
- Univariate, Bivariate and Multivariate
- Histogram
- Box-plot
- Variance, Standard Deviation
- Median
- IQR ( InterQuartile Range)

## Module 8: Feature Engineering

- Introduction
- Need for Feature Engineering in Machine Learning
- Steps in Feature Engineering
- Feature Engineering Techniques

## **Module 9: Performance Metrics & Parameter Tuning**

- Confusion Matrix
- ROC Curve
- Cross Validation in Machine Learning
- K fold Cross Validation & Grid search

## **Module 10: Supervised Learning - Regression I**

- Linear Regression - Mathematical Intuition
- Programming of Linear Regression in Python-scikit learn

## **Module 11: Supervised Learning - Classification**

- Data types and its measures
- Random Variables,its application with variables
- Probability-Application with examples
- Probability distribution with examples
- Sampling Funnel-why And how

## **Module 12: UnSupervised Learning - Clustering**

- Unsupervised Learning
- Types of Unsupervised Learning
- Applications of Unsupervised Learning
- Introduction to Clustering Algorithms
- Types of Clustering Algorithms
- What is K-Means Clustering?
- Implementation of K-Means Clustering
- Improving Models

## **Module 13: UnSupervised Learning - Association Rule Mining**

- What is Association Rule Mining?
- Algorithms in Association Rule Mining
- Implementation of Apriori in Python