

Machine Learning using Python Syllabus

BASIC LEVEL

Introduction 2 Hours - 4 Topics

- **What is Machine Learning (Day 1)**
- **Why Machine Learning (Day 1)**
- **Application of Machine Learning (Day 1)**
- **Data and Data Preprocessing (Day 1)**

Python Revisited 2 Hours - Day 2

Lab set up 2 Hours - Day 3

Data Pre-Processing 2 Hours - Day 4

Regression 6 Hours - 7 Topics

- **Simple Linear Regression (Day 5)**
- **Multiple Linear Regression (Day 5)**
- **Polynomial Regression (Day 5)**
- **Support Vector Regression (SVR) (Day 6)**
- **Decision Tree Regression (Day 6)**
- **Random Forest Regression (Day 7)**
- **Regression Models Performance (Day 7)**

Classification 4 Hours - 5 Topic

- **Logistic Regression (Day 8)**
- **K-Nearest Neighbors (K-NN) (Day 8)**
- **Support Vector Machine (SVM) (Day 9)**
- **Kernel SVM (Day 9)**
- **Classification Models Performance (Day 9)**

Clustering 4 Hours - 2 Topic

- **K-Means Clustering (Day 10)**
- **Hierarchical Clustering (Day 11)**

Natural Language Processing 4 Hours - Day 12 & 13

Dimensionality Reduction 2 Hours - 3 Topics

- **Principal Component Analysis (PCA) (Day 14)**
- **Linear Discriminant Analysis (LDA) (Day 14)**
- **Kernel PCA (Day 14)**



Boosting	2 Hours - 2 Topics
<ul style="list-style-type: none">• Model Selection (Day 15)• XGBoost (Day 15)	
Project	2 Hours - Day 16
Project	2 Hours - Day 17
Project	2 Hours - Day 18
Project	2 Hours - Day 19
Project Evaluation	2 Hours - Day 20

ADVANCED LEVEL

Introduction	2 Hours - 4 Topics
<ul style="list-style-type: none">• Introduction to Advanced Machine Learning (Day 1)• Supervised Learning (Day 1)• Unsupervised Learning (Day 1)• Data and Data Preprocessing (Day 1)	
Machine Learning Revisited	2 Hours - Day 2
Classification	6 Hours - 4 Topics
<ul style="list-style-type: none">• Naive Bayes (Day 3)• Decision Tree Classification (Day 3)• Random Forest Classification (Day 4)• Classification Models Performance (Day 5)	
Association Rule	6 Hours - 2 Topics
<ul style="list-style-type: none">• Apriori (Day 6)• Eclat (Day 7 & 8)	
Reinforcement Learning	4 Hours - 2 Topics
<ul style="list-style-type: none">• Upper Confidence Bound (UCB) (Day 9)• Thompson Sampling (Day 10)	
Deep Learning	4 Hours - 2 Topics
<ul style="list-style-type: none">• Artificial Neural Networks (Day 11)• Convolutional Neural Networks (Day 12)	
Probability	4 Hours - 7 Topics
<ul style="list-style-type: none">• Random Variable (Day 13)• Mean and variance (Day 13)• Probability (Day 13)• Conditional Probability (Day 14)• Bays Theorem (Day 14)• Estimation (Day 14)• Sampling (Day 14)	
Machine Learning in Information Security	2 Hours - 2 Topics
<ul style="list-style-type: none">• Data Exploration (Day 15)• Spam Filtering (Day 15)	
Project	2 Hours - Day 16
Project	2 Hours - Day 17
Project	2 Hours - Day 18



Project **2 Hours - Day 19**

Project Evaluation **2 Hours - Day 20**