**Mastering Machine Learning with Python**

**Course Objectives:**

* To make the participants understand the **fundamentals of machine Learning**, its applications, and its types in detail.
* To make the participants well-versed in using a range of **Machine Learning Algorithms/Models** along with their strengths and weaknesses.
* To make the participants comfortable in using the **prediction models** with the help of Projects/Assignments.
* To make participants able to use **suitable algorithms** and **techniques** to solve real-world problems using **Machine Learning.**
* To prepare the foundation for learning **advanced concepts** like **Reinforcement Learning, Neural Networks and Deep Learning**.

**Batch Details:**

**Class Timings:** 6:30 pm – 8:30 pm (Mon-Wed-Friday) **Start Date:** 8th January 2024

**Duration:** 2.5 Months **End Date:** 22nd March 2024

**Mode:** Online (ILT over Zoom/Webex/GMeet) **Certification**: Globally accepted

**Last Date to Register:** 7th Jan 2024

**Course Fee:** Students/PhD Scholars/RA/JRF/SRF/Postdoc fellows: Rs. 8000/-

Faculty/Working Professional: Rs. 10,000/-

Link to Download Curriculum Link to Register

<https://rzp.io/l/masteringMLwithPython>

**About the Course:**

Machine Learning is the most used technology these days due to its ability to automate tasks, detect patterns and learn from Data and Python is the language that is extensively used in Machine Learning applications. Therefore, this course is designed for students/researchers/faculties/working professionals in such a way that they can first learn the fundamentals of Python and its libraries required for the Machine Learning Applications and then, they will be taught a detailed course on Machine Learning starting from the scratch. This course will make the participants efficient in using Python Libraries and Machine Learning models for various real-world applications and the skills acquired from this course along with the certification will enhance their employability and will open doors to exciting career prospects.

**Course Overview**

**Module 1 Module 2**

**-**Basics of Python Language

- Python objects with details of shell/numbers/variables etc.

- Python for Data cleaning and preprocessing using Pandas

- Python for Data visualization & Graphical plotting using libraries like Matplotlib & Seaborn

- Hands-on project to demonstrate the use of Python for Data Analytics, splitting Data into train & Test set, features scanning

**-** Machine Learning Basics, introduction to supervised & unsupervised learning

- Linear Regression for One and Multiple Variables, Cost Function & Gradient Function

- Ordinary Least Square, Dummy Variables, One Hot Encoding, Polynomial Regression

- Anscombe’s quartet, Performance Metrics like Mean Absolute Error, Root Mean Squared Error, - Regularization (Ridge & Lasso)

**Module 3 Module 4**

- Logistic Regression, Sigmoid Function, Anscombe’s quartet

-Confusion Matrix, Interpreting parameters like F-1 score, Accuracy, Precision, Recall etc.

- Bias-variance trade off, Overfitting, Underfitting of Models

-K- nearest neighbors (KNN), Elbow Method

-Distance Metric in KNN

**-** Understanding Support Vector Machines using Hyperplanes, Maximum Margin Classifier

- Higher Dimension Transformation and Projection, Kernels :: Polynomial, RBF etc.

- Decision Trees, Nodes: Root, Leaf, Parent, Children. Tree Pruning, Gini Impurity

- Random Forests, Ensemble Learners, Information Gain

- Hands-on Projects

**Module 5 Module 6**

**-**Boosted Trees, Weak and Strong Learners, AdaBoost, Gradient Boosting, Stump Classification

-Naive Bayes classifier, Conditional Probability, Bayes Theorem

- Natural Language Processing (NLP), Count Vectorization, Extracting Features From Text Data, Term Frequency - Inverse Document Frequency (TF-IDF) , Document Term Matrix (DTM)

-Hands-on Projects

-Unsupervised Learning Basics

- K-Means Clustering, Clustering of unlabeled data, Assigning new point to the cluster

-Hierarchical Clustering: Agglomerative and Divisive Approach, Dendrogram, Linkage Matrix, Similarity Metrics, Ward

- DBSCAN, epsilon distance, Core, Border and Outlier

-Principal Component Analysis (PCA), Dimension Reduction

**Benefits and Program deliverables:**

* A digital toolkit of PPTs/software packages and study material for all participants
* Interact with the experienced Industry training expert to work on real-life challenges
* Complete Recording of the Classes on a daily basis
* An opportunity to exchange ideas and thoughts with students participating from colleges PAN India IIT’s, NIT’s, and Reputed Universities
* Small batches for one-to-one interaction and individual doubt sessions
* Live demonstration of topics and practicals is included to ensure that the candidate can get hands-on exposure

**Prerequisites and eligibility:**

* No coding experience required. We’ll start from scratch.
* This course can be taken up by any undergraduate/postgraduate student of Basic & Applied Sciences, Engineering, and Computer Applications and also by Research Scholars/Faculties/Working Professionals who want to upskill themselves
* Participants need to have a laptop/PC (with a minimum of 4 GB RAM, 100 GB HDD, Intel i3processor) and proper internet/Wi-Fi connection.

**Rewards:** Attach a sample certificate

**Contact Person: Dr. Subrat Kotoky**

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**Expert Profile:** Mr. Shreyas Shukla

Professional Corporate Trainer & Microsoft Azure Certified Data Engineer

M.Tech-IIT Kharagpur & BE- The Aeronautical Society of India, New Delhi

1. DP-203: Microsoft Certified: Azure Data Engineer Associate

2. DP-900: Microsoft Certified: Azure Data Fundamentals

3. AZ-900: Microsoft Certified: Azure Fundamentals