JADAVPUR UNIVERSITY

COMPUTER AIDED DESIGN CENTER

Faculty Council of Engineering & Technology

Kolkata-700032

Certificate Course on

Industrial Applications using Python

(Specialization: Data Science & Machine Learning)

Python the best fit for machine learning, Data Science and AI-based projects include simplicity and consistency, access to great libraries and frameworks for AI and machine learning (ML), flexibility, platform independence, and a wide community. These add to the overall popularity of the language.

In This Program we will cover numpy, pandas, matplotlib, seaborn, sklearn all worldwide famous library.

One single program providing basic python installation to machine learning applications & Data Science Implementations (include more than 10 project implementation).

Total Theory	Total Practical
25 hrs	35 hrs

Eligibility	Graduation in Science Domain Preferred or Engineering- Basic Concept of Programming will be added advantages
Total Duration	60 hrs
Theory	2 hrs
Practical	2 hrs
Self Project	16 hrs

Serial No.	Topic	No. of Theory	No. of Practical	Total Involvement

1	Basic of Python Programming-I Installation of Python (Include Anaconda Distribution) Basic Data Types Variables Functions Boolean Operations File Concept	1	1	2
2	Basic of Python Programming-II String Operations Concept of Loop(While, if , If, For , Elif , else) Concept of Dictionary Concept of List Concept of Tuple Comparison Operator Lambda Expression Array in Depth Study	1	1	2
3	Numerical Python Numpy Essentials Numpy Essentials - II Arrays, Built - in Method Slicing, Broad Cast , Boolean Arithmetic Operations Universal Functions Exercise	1	2	3
4	Python for Data Analysis A. Pandas Installation B. Pandas Essentials C. Pandas Data Structure D. Hierarchical Indexing E. Handling Missing Data F. Data Wrangling - Combining , Merging etc G. Group by Clause Pandas - Real Life Project Project Solutions	1	2	3

4	Python For Data Visualization Matplotlib Essentials Basic Plotting Objected Oriented Exercise Based Learning with Real Life Data Set Study	1	1	2
5	Python For Data Visualization using Seaborn Installation Distribution Plot Categorical Plot Axis Plot Matrix Plot Regression Plot Real Life Data Set Implementation of Seaborn	1	2	2
6	Capstone Project using Pandas & Numpy - 1 Capstone Project Using Matplotlib & Seaborn	0	2	2
7	Python for Machine Learning Introduction to ML Theory of Regression Model Theory of TP, TN , Accuracy , Mat.. Concept of Liner Regression Concept of Logistic Regression Project -1: using Linear Regression Project 2: Using Logistic Regression	1	2	3
8	K Near Neighbor (KNN) Theory of K Nearest Neighbors Hands on Lab Session on KNN One Project Implementation of KNN	1	2	3

9	Decision Tree Theory D - Tree , Random Forest , Entropy , IG , Bootstrap Decision Tree & Random Forest - Hands on Session Decision Tree & Random Forest - Project Implementation	1	2	3
10	Concept of Support Vector Machine Theory of SVM SVM Hands on Session One Project Based Learning	1	1	2
11	Concept of K Means Clustering Theory of K Means Clustering Elbow Method Hands on Session on Clustering	1	1	2
12	Principal Component Analysis Theory of PCA PCA - Hands on Session Project Using PCA	1	1	2
13	Recommender System Theory of Recommender System Python Applications for Recommender System	1	1	2
14	Introduction to Time Series Analysis Example of application of time series on real life data set	1	1	2
15	Concept of Forecasting Example of Forecasting with ARIMA Model Theory & Practical	1	1	2

Final Project Submission: One Day Demonstration of Project Work
Certificate: Completion certificate (in printed form) will be provided at the end of the course
Candidate will get Class Notes + Live Class Recording Access After Completion of Course 15 Days Only -