

JADAVPUR UNIVERSITY
COMPUTER AIDED DESIGN CENTRE
 Faculty Council of Engineering and Technology
 Kolkata - 700 032

**Certificate Course on
 Python for Machine Learning**

Scope

Python the best fit for **machine learning** 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 world wide famous library. One single program providing basic python installation to machine learning applications (include more than 10 project implementation).

Course Duration: 38 hrs.

Eligibility: **Higher Secondary with concept of Basic C Programming**

Class Duration: Theory 2 hr / class

Lab 2 hr / class

Program Details

Serial No	Topic	No. Of Theory Classes	No. of Practical Session	Total No. of Classes	Coverage
1	Basic of Python Programming-I Installation of Python (Include Anaconda Distribution) Basic Data Types Variables Functions Boolean Operations File Concept	1	2	3	Day 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	2	3	Day 3-4
3	Numerical Python Numpy Essentials Numpy Essentials - II Arrays, Built - in Method Slicing, Broad Cast , Boolean Arithmetic Operations	1	1	1	Day 5

	Universal Functions Exercise				
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	2	2	2	Day 6-7
5	Python For Data Visualization Matplotlib Essentials Basic Plotting Objected Oriented Exercise Based Learning with Real Life Data Set Study	1	1	1	Day 8
6	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	1	1	Day 9
7	Capstone Project using Pandas & Numpy - 1 Capstone Project Using Matplotlib & Seaborn	0	2	2	Day 10-11
8	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	2	2	2	Day 12-13
9	K Near Neighbor (KNN)	1	1	1	Day 14

	Theory of K Nearest Neighbors Hands on Lab Session on KNN One Project Implementation of KNN				
10	Decision Tree Theory D - Tree , Random Forest , Entropy , IG , Bootstrap Decision Tree & Random Forest - Hands on Session Decision Tree & Random Forest - Project Implementation	1	1	1	Day 15
11	Concept of Support Vector Machine Theory of SVM SVM Hands on Session One Project Based Learning	1	1	1	Day 16
12	Concept of K Means Clustering Theory of K Means Clustering Elbow Method Hands on Session on Clustering	1	1	1	Day 17
13	Principal Component Analysis Theory of PCA PCA - Hands on Session Project Using PCA	1	1	1	Day 18
14	Recommender System Theory of Recommender System Python Applications for Recommender System	1	1	1	Day 19

Doubt Clearing Session: One Session for 1 hr at the end of program

Final Project Submission: One Day Demonstration of Project Work

Certificate: Completion certificate (in printed form) will be provided at the end of the course.