Jadavpur University
Computer Aided Design Centre
Faculty Council of Engineering and Technology
Kolkata-700032

Winter/Summer Training
Data Science using Python

Scope:

Python is the best programming language for Data Science projects because of its simplicity and consistency, access to great libraries and frameworks for Data Science / Data Analytics, flexibility, platform independence, and a wide community. These add to the overall popularity of the language. In This Program we shall cover numpy, pandas, matplotlib, seaborn, sklearn all worldwide famous library. One single program providing basic python installation to machine learning applications (include more than 8 project implementation); at the end of session we shall move towards time series analysis applications using Python.

Course Duration: 40 hrs

Class Duration: Theory Sessions: 2 hrs each; Practical Sessions: 2 hrs each

Eligibility: Engineering students of any discipline
Participants must have mobile devices running Android 4.0.3 or above; laptop/desktop computer with Windows; and stable internet connectivity. Google Meet should be preinstalled the mobile device.

Serial No	Topic	No. Of Theory	No. Of Practical	Total Class	Coverage
1	Basic of Python Programming-I Installation of Python (Include Anaconda Distribution) Basic Data Types Variables Functions Boolean Operations File Concept	1	1	2	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 ComparisonOperator Lambda Expression Array in Depth Study	1	1	2	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	**1**	**1**	**2**	**Day 5-6**
4	Python for Data Analysis A. PandasInstallation B. PandasEssentials C. Pandas Data Structure D. HierarchicalIndexing E. Handling Missing Data F. Data Wrangling - Combining , Mergingetc G. Group by Clause Pandas - Real Life Project &Project Solutions	**1**	**1**	**2**	**Day 7 -8**
5	Python For Data Visualization Matplotlib Essentials Basic Plotting Objected Oriented Exercise Based Learning with Real Life Data Set Study	**1**	**1**	**2**	**Day 9-10**
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**	**2**	**Day 11-12**
7	Capstone Project using Pandas & Numpy - 1 Capstone Project Using Matplotlib & Seaborn	**N/A**	**2**	**2**	**Day 13-14**

8	Python for Data Science Introduction to Data Science 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**	**Day 15-17**
9	K Near Neighbor (KNN) Theory of K Nearest Neighbors Hands on Lab Session on KNN One Project Implementation of KNN	1	1	1	**Day 18**
10	Introduction to Time Series Analysis Example of application of time series on real life data set	**N/A**	1	1	**Day 19**
11	Concept of Forecasting Example of Forecasting with ARIMA Model Theory & Practical	**N/A**	1	1	**Day 20**

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

Final Project Submission: One Day Demonstration of Project Work

Examination: Online Examination will be conducted at the end of the course.

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