AI and ML WITH PYTHON

This AI and ML course focusses on the basic concepts of AI and ML. Topics related to supervised learning, unsupervised learning, linear regression, etc. will be covered. Essential Python programming fundamentals with dataframes and then specifically on the Pandas, NumPy, Matplotlib, Seaborn and other specific skill areas scientists, engineers, statisticians and mathematicians who need to work with crunching data, manipulating arrays, performing statistical calculations, and plotting results will be taught. This hands-on training facilitates scientific computing. Simple aspects of NLP, text mining and generating word cloud, sentiment analysis using Python will also be taught during the course. Each training module is reinforced with informal practice and dedicated by lab exercises. Practice problems/assignments will also be provided after every topic followed by discussions on them to get a good understanding of each topic.

Day	Time duration	Contents
Day 1	Three hours	What is the relevance of AI and ML and its inclusion in Industry 4.0 and how programming concepts are used in AI and ML, Installation and using Python:What is Python language and why Python for AI and ML?
Day 2	Three hours	Some real life examples of AI and ML, Variables and expressions in Python: how a program uses the computer's memory to store, retrieve and calculate information, introduction to handling data with Excel sheets and CSV files in Python, Introduction to Python, Installation and features of python, Data Types, Variables, Basic Input-Output Operations, Boolean Values
Day 3	Three hours	Working with Data in Python: Pandas: Working with and Saving Data, Introduction to Data:Types of data that exist and observe where they can be found in everyday life, introduction to Jupyter notebooks, pandas, numpy, matplotlib, scikit-learn
Day 4	Three hours	Data Manipulation with Python: Study toolkits Python has for data cleaning and processing -- pandas. How to read and query data into DataFrame structures, Analyzing categorical data, Displaying and comparing quantitative data, Summarizing quantitative data.
Day 5	Three hours	Data Processing with Pandas: merge DataFrames, generate summary tables, Data processing with numpy, Introduction to Machine Learning, supervised learning, Linear regression,
Day 6	Three hours	Introduction to Data Visualization Tools in Python, Generating plots , charts and graphs in Python for project examples, Plots and charts with Python
Day 7	Three hours	Introduction to Unsupervised learning, Clustering, Features and applications, Simple exercises and examples related to data processing with Pandas, linear regression continued, K-means clustering
Day 8	Three hours	Introduction to natural language processing, Understanding text analysis, regex expressions, generating word cloud, sentiment analysis