Course Name	Python for Machine Learning
Course Duration	5 Day (40 hours)
Target Audience	Data Analyst, Business Analysts, Data Scientist
Course Outcomes	Master Python fundamentals for data manipulation and analysis.
	Explore data types, control flows, and operators in Python.
	Gain proficiency in data pre-processing and cleaning techniques.
	Perform exploratory data analysis using Pandas and NumPy.
	Develop skills in data visualization with Matplotlib.

Module	Content
Introduction to Python	Definition & Applications
and Basics	Features, Versions & Working
	Anaconda & Different IDEs for Python
	Introduction to IDE's - Jupiter Notebook, Spyder & Google
	Colab
Data Types and Control	Literals, reserved words and input functions
Flows	Data Types: int, float, bool, str
	Decision Control Flows: If / Nested If / If-else / If-elif-else
	Control Flow Loops: While loop, For loop, While-else, For-else
	Operators: Arithmetic, Relational or Comparison, Logical
Lists, Tuples, Sets, and	Bitwise Operators, Assignment Operators, Ternary Operator
Dictionaries	List: Ways of Accessing Values, Traversing Elements, List
	Operations, List Methods, Membership Operator, List
	Comprehension
	Tuples: Creating Tuples, Ways of Accessing Values, Tuple Vs
	Immutability, Tuple Comprehension
	Sets: Creating Sets, Ways of Accessing Values, Manipulating and
	Accessing Sets, Set Operations
	Dictionary: Why Dictionary, creating a Dictionary, Accessing
	Values, Updating Dictionaries, Functions of Dictionary
File Handling and	File Handling: Types of Files, Opening and Closing Files,
Strings	Writing, Appending, and Reading Files
S	Strings: String Literals, Single (") & Double Quotes (""), Triple
	Quotes (""), Raw Strings ("r'' ") and Operations on strings
	Dictionary: Accessing Values, Updating Dictionaries, Functions
	of Dictionary
Iterators & Generators	Iterator vs Iterable, Containers, Generators in Python
Regular Expressions	Uses of Regular Expressions - Text Analytics, import re,
2	Character Classes, Backslash, Alteration, Quantifiers
OOPS Concept	Class, Classes and Object, Creating Object, Accessing Objects,
•	Need and Use of Self, Class Method, init () constructor
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Introduction to NumPy,	Introduction to NumPy, Install NumPy
Pandas & Matplotlib	Array Creation, Array Reshaping, Indexing, Operations
-	Introduction to Pandas, Slicing Data, Slicing DataFrame
	Data Visualization with Matplotlib
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Introduction to Data	Filtering DataFrame, Transforming DataFrame, Advanced
Preprocessing	Indexing

	Data Cleaning & Data Preprocessing
Exploratory Data	Data Cleaning Techniques, Handling Missing Data, Handling
Analysis (EDA)	Categorical Data
	Introduction to EDA, 2D Scatter-plot, 3D Scatter-plot, Pair plots
	Univariate, Bivariate, and Multivariate Analysis, Box-plot
	Variance and Standard Deviation, Median, IQR (Interquartile
	Range)
Advanced Pandas and	Advanced Pandas, Advanced Indexing, Data Preparation
Data Visualization	Handling Missing Data, handling Categorical Data, Data
	Cleaning
Data Visualization	Introduction to Data Visualization, Plotting with Matplotlib
	Scatter Plots, Line Plots, Bar Plots, Pie Charts, Heatmaps
Project Work	Problem Statement, Data Collection, Data pre-processing
	(Exploratory Data Analysis), Feature Engineering (optional),
	Data visualizations (Pandas, NumPy & Matplotlib), Project Final
	Outcome & findings