

Course Title : Python Essentials for Data Analytics

Duration : 2 Days

Python is one of the most popular language for Data Analytics. Its vast collection of libraries, tools and utilities make it the ideal language for aspiring Data scientists and analysts. Libraries such as *Pandas* make working with data in python easy and engaging. Dealing with complex statistical analysis requirements is possible using relatively simple python scripts. The python community and support of major corporations in development of python platform ensures its long-term viability for data enthusiasts

This is a 2-day program aimed at developers, database administrators and data modelers who want to step into the role of a data scientist or data analyst by using python as the platform of choice. This program is an ideal blend of hands-on training experience along with required theoretical fundamentals

Pre-requisites for candidates

- Familiarity with programming/ scripting terminologies
- Basic understanding of command line/ terminal to execute scripts
- Basic idea of file formats for storage of data in files

What Candidates will gain from this training?

- Profound understanding of fundamentals of Python
- Detailed understanding of libraries in python used for Data analysis
- Hands on experience of Data Analysis, pre-processing, and statistical operations using python
- Understanding Data Visualization with various types of graphs, modifying aesthetics, parameters of plots, layouts, etc

Day- 1 Part 1: Getting Started with Python Scripting, Data structures & OOP

Basics of Python Language

- Introduction to Python
- Setting up a Python environment (IDE, editors, environment variables, package manager , etc)
- writing a “*Hello World*” script in Python
- Input/Output functions (print,input,sep,end arguments for print , etc)
- Introduction to basic data types in python

Control flow & Strings in Python

- if, if-else, if-elif, else blocks
- Loops – *for loop* and *while loop*, variations of these loops and how to implement them
- Introduction to strings and string functions
- Use of split,find,replace and other functions for strings
- *raw* strings, *byte* strings, *f-strings* in python with multiple examples

Lists and Dictionaries

- Lists in Python and their properties
- List functions(*copy,append,remove,extend,etc*) and operations using lists
- List comprehension and how to write comprehension expressions
- Dictionaries in Python and their characteristics
- Keys, values and nested dictionaries
- Dictionary functions (*get,fromkeys,popitem,etc*)

Functions and lambda expressions

- Functions in python
- Nested functions and syntax for definition and calling such nested functions
- Lambda functions in python
- Lambda as key for sorting

Object Oriented Programming in Python

- Understanding classes and objects
- Writing OOP based code in python
- Using constructors, representation , static and class methods
- Understanding inheritance, method overriding , etc

Day 2: Part 2: Data analysis, manipulation and visualization in python

Getting started with Pandas library

- Reading Data from various sources(CSV, Excel, Databases, etc)
- Creating data frames from python objects
- Series and Data Frame basics
- Extracting rows, columns from data frames
- Functions to obtain results of common statistical operations(mean, standard deviation , etc)
- Applying conditions to extract matching rows and columns from data frames

Numpy library in Python

- Introduction to features of *numpy*
- Creating multi-dimensional arrays using *numpy*
- Indexing and slicing of *numpy* arrays
- Important functions in *numpy* (Sorting, arithmetic operations, Broadcasting ,etc)

Data Visualization in Python

- Introduction to Data visualization using *Matplotlib* and *Seaborn* modules in python

- Plotting various types of graphs (Line Graph, bar graph, etc)
- Using *Seaborn* to change template styles and contexts for plots
- Addition features of *Seaborn* – x and y axis ticks, orientation , color palette , etc
- Adjusting figure size, width, height, legend , etc in graphs
- Using facet grids to plot multiple graphs in grids