**Python + Data Science**

**Syllabus**

**1: Introduction to Python**

* Installation and Working with Python
* Understanding Python variables
* Python basic Operators
* Understanding python blocks
* Type casting, Unicode etc.

**2: Python Data Types**

* Declaring and using Numeric data types: int, float, complex,bool
* Using string data type and string operations
* Defining list and list slicing
* Use of Tuple data type

**3: Python Program Flow Control**

* Conditional blocks using if, else and elif
* Simple for loops in python
* For loop using ranges, string, list and dictionaries
* Use of while loops in python
* Loop manipulation using: pass, continue, break
* Programming using Python conditional and loops block

**4: Python String, List, set and Dictionary Manipulations**

* Building blocks of python programs
* Understanding string in build methods
* List manipulation using in build methods
* Tuple operation
* Set manipulation
* Dictionary manipulation

**5: Fundamentals of Object orientation:**

* Class, Object
* Constructor
* Types of Variables
* Methods and its types
* Importing Class
* OOP’s Concepts: Inheritance, Encapsulation, Abstraction, Polymorphism
* File handling: text, binary, csv
* Exception handling: try, except, else, finally

**6. Complete Data Science:**

**NumPy: (Numerical Python)**

* Introduction to Numpy
* Datatypes of ndarrays
* Dealing with ndarrays, copies and views
* Arithmetic operations,
* Indexing , Slicing, splitting arrays
* Shape manipulation
* Stacking together different data

**Pandas: (Data Analysis)**

* + DataFrame and Series
  + DataFrame operations
  + Data Slicing, indexing
  + DataFrame functions
* Reading the files- csv, excel
  + Boolean filtering
  + Storing file in various formats
  + Useful DataFrame functions
* Stats using pandas
* Dealing with missing data
* Operations over the data

**Matplotlib ( Data Visualization)**

* + Introduction to Matplotlib
  + Simple plotting
  + Formatting the graph: colors, markers, line style, etc
  + Customization
  + Plotting with list, arrays, pandas
  + Types: scatter plot, bar chart, pie chart, histogram