Python Skill Development Programme Schedule

Day 1: Introduction

- ➔ Why is Python important?
- ➔ Installation
- ➔ Setting up PATH environment variable
- ➔ Hello World
- ➔ Reserved words
- ➔ IDEs for Python

Day2: Python Basics

- ➔ Code structure
- ➔ Importance of Indentation in Python
- ➔ Multiline statements
- ➔ Multiple statements in a single line
- ➔ Comments
- ➔ User Input
- ➔ Types in Python
- ➔ Variable initialization and how values are stored
- ➔ Operators

Day 3: Operators

- ➔ Operators
- ➔ Bitwise operators
- ➔ Decision making
- ➔ Ternary equivalent in Python
- ➔ Python 2 print statement problems

Day 4: Loops

- ➔ For loop
- ➔ While loop
- ➔ Loops with else

Day 5: Explanation of types and their inbuilt functions

- ➔ int
- ➔ float
- ➔ complex
- ➔ list

Day 6: Explanation of types and their inbuilt functions (Contd.)

- ➔ list
- ➔ tuple
- ➔ set

- ➔ frozenset
- ➔ str

Day 7: Explanation of types and their inbuilt functions (Contd.)

- ➔ str
- ➔ str formatting
- ➔ dict
- ➔ bool (type casting problems)
- ➔ split and join
- ➔ map, filter, reduce

Day 8: Functions

- ➔ Functions
- ➔ Functions with default argument values
- ➔ Global variables and how to access them

Day 9: Class

- ➔ Class
- ➔ Simple threads in python

Day 10: Extras

- ➔ List comprehension
- ➔ zip function
- ➔ * operator (unpacking)
- ➔ Transpose of a matrix (in one line of python code)
- ➔ She-bang #!
- ➔ if __name__ == '__main__': pass
- ➔ enumerate( )

Day 11: Simple Modules

- ➔ Importing modules
- ➔ random module
- ➔ datetime module
- ➔ collections module
- ➔ fractions module
- ➔ itertools module
- ➔ sys module

Day 12: Class

- ➔ Special class on class

Day 13: Py2 ~ Py3

- ➔ Differences between python2 and python3
- ➔ Add aliases for python2 and python3 in Windows environment

Day 14: Coding Conventions

➔ Special class on python coding conventions

Day 15:

➔ Generator expressions
➔ Lambda functions
➔ Function overloading
➔ def f (*args, **kargs): pass :- list and dict unpacking

Scientific Python (Important for machine learning and deep learning):

1. NumPy (Numerical Python) (2 Days)
   a) N-dimensional array object.
   b) Sophisticated(broadcasting) functions.
   c) Tools for integrating C/C++, Fortran code.
   d) Useful linear algebra, Fourier transform, and random number capabilities.
   e) Basic NumPy inbuilt functions
      i) Array creation and manipulation routines.
      ii) Linear algebra and matrix manipulations
   f) Use of NumPy in Machine Learning with sample codes.

2. Mathplotlib (2 Days)
   a) Introduction
   b) Simple plot
   c) Figures, Subplots, Axes and Ticks
   d) Animation
   e) Other Types of Plots
   f) Applications of matplotlib plotting in ML and DL
   g) Exercises on various plots, graphs and charts.

3. Scikit-learn (3 Days)
   a) Simple and efficient tools for data mining and data analysis
   b) Using the tools and algorithms for the following:
      i. Classification
      ii. Regression
      iii. Clustering
      iv. Pre-processing
   c) Solving real life examples with available data sets.

4. Practical (1 Day)
   Building algorithms to solve real world problems on deep learning.

5. Extras (1 Day)
   a) Discussion and giving demo on using Tensorflow and pytorch.
   b) Other deep learning tools and algorithms.

c) Data handling with pandas library.

6. Networking with Python
   a) Request library (1 Day)
      i. Basic get, post requests using the library functions
      ii. Basic examples
   b) Socket library (1 Day)
      i. Important functions of the socket library
      ii. Exercise and examples on solving real life networking problems (mailing, server-client, grabbing etc)