Course Structure of Python Training:

UNIT - 1: COMPUTER FUNDAMENTALS

- Computer Fundamentals
  - What is a Computer?
  - Computation vs calculation
- Microprocessors and Memory Concepts
  - Discussion on register, Cache memory, primary memory(RAM), secondary memory(H/D)
  - Our inference from above learning
- Data Representation in Computer
  - Computer Number system/format
  - Representation of different Number system in Python
- Installation of Development Tools:
  - Installation of python 2.7 and 3.5
  - Installation of Pycharm Educational Edition
  - Installation of Beyond Compare
  - Installation of grepwin

UNIT - 2: PROGRAMMING METHODOLOGY

- Algorithms and Flowcharts
- Programming Methodology
  - Procedural programming
  - Functional programming
  - Object Oriented programming
- Type system of the language
  - Gradual Typing
  - Strong Typing
  - Dynamic Typing
  - Duck Typing
- Static binding and Dynamic binding
- Assignment on designing solution for at least 3 problems using Flowchart and Algorithm

UNIT - 3: INTRODUCTION TO PYTHON

- Getting Started with python
  - Introduction to python
  - Python Release timeline
  - Byte code interpretation of instruction set in python
  - Different implementations of python (Cpython, Iron Python, Jython, pypy)
  - Advantage of Python Language comparing to other languages (Java, scala, R)
  - Python Command Line Environment
  - Demonstration of **IDLE** (**I**ntegrated **D**eve**L**opment **E**nvironment or **I**ntegrated **D**evelopment and **L**earning **E**nvironment)
  - Practicing few basic programming in IDLE and pycharm IDE
- Discussion on application of python language
  - Solution to Big Data in Hadoop using python
  - SPARK using python
  - Data Science using python
  - Automation Testing using python in Selenium
  - Web Development using Django framework in python
  - Application development using python
  - Operating system implementation using python (Fedora)

UNIT - 4: PROGRAMMING WITH PYTHON

Chapter 1:

- Overview of key words and python standard library
- Python Enhancement Proposals (PEPS)
- Python Coding Style and naming convention (pep8)
- Shebang #! In python
- Documentation in python
- Introducing python community and user groups(mailing lists, city based user groups, workshops and conferences across India)

Chapter 2:

- Basic programming practice
- Operators in Python
- Operator Precedence
- Symbols not used in python
- Discussion on __main__ (why to use this and when)

Chapter 3:

- Data Type in Python:
  - Scalar Data Type (Number data type)
  - None Data Type
  - Sequence Data Type (Strings, Lists & Tuples)
  - Mapping Data Type(Dictionaries)
  - Practicing programs for hands on in implementation of above data types
- Built In functions in python for data manipulation in String, List, tuple, dictionary
- Escape Sequence
- Set Algebra using python
- Discussion on dictionary comparing list (why dictionary when we have list)
- Type Conversion

Chapter 4:

- Scope of variables
- Built in Functions
- Defining and working with user defined functions
- Discussion on creation of user defined modules
- Demonstration of built in mathematical functions and its usage
- Shallow copy in python

Chapter 5:

- Conditional and Looping Construct
- for loop, while loop, else statement with while loop
- Loop Control statement
- Practicing to write code for complete solution to problems as a professional with proper documentation and code convention

Chapter 6:

- Lamda Function (Filter, Reduce and Map functions) in Python
- List Comprehension, Dictionary comprehension , set comprehension in Python
- Iterators and Generators in Python
- Iter tools in python
- Generator in python
- Generator Comprehension in python
- Regular Expression in Python

UNIT - 5: Exception Handling in Python

- Built In Exceptions in Python
- User Defined Exceptions in Python

UNIT - 6: File Handling Concepts

- Introduction to flow of file handling
- Read and write into file using python
- Reading and Writing into CSV with special functions
- Different operations on file like renaming and deleting using python
- Hands on in python script for file level validation.
- For E.g.:
  - ➢ File Naming Convention
  - ➢ File Layout validation
  - ➢ Zero Byte file check
  - ➢ Duplicate file check

UNIT - 7: Review of Python & Concept of Oops

- Review of learning and code practice for previous learning
- Concept of Object Oriented Programming
- Classes in Python
- Constructor and Initializer in Python
- Access Modifier in python

- Static method
- Inheritance
- Polymorphism and Duck typing

UNIT - 8: Python Documentation and Code Quality Check

- Making of MSI files for deployment
- Documentation in Python
- Coding convention check with pep8
- Installation of third party modules

Unit-9: Additional Advanced Concepts:

- Monkey Paching
- Dependency Injection
- Observer Pattern
- Singleton
- Picking
- Unpickling
- multithreading

Your Takeaway after the Learning:

- Develop an understanding of key concepts on how to build the logic and write programs in Python using variables, operators, etc.
- Develop the ability to construct program block using functions, to store data to file, dictionaries etc.

You will be able to:

- Identify basic building blocks of a programming language
- Use built-in and user-defined functions
- Perform string manipulations
- Manage files
- Store and manipulate data using dictionary and tuples

What Next ???

Application of Python:

- **Data Extraction and Filtering using Python**

- **Hadoop using Python**
- **SPARK using Python**
- **Data Science using Python**
- **Automation Testing using Python**
- **Web Development Using Python**
- **Application Development using Python**