**Python Programming :**

**Duration : 4 Days**

**Day 1:**

**Module 1 Introduction to Python, Data Types, Quotations(REVISION)**

* Python Interpreter and its Environment
* Python 3.x : Background, Relevance
* Numbers
* Strings
* Declaration of variables
* If Statements
* While construct
* For Statements
* Break and continue Statements, and else clauses on Loops
* Pass Statements
* Arrays, Lists and Tuples
* Dictionary and Sets
* List and array slicing

**Module 2 Functions**

* Local variables
* Default Argument Values
* Returning Values
* Keyword & Positional Arguments
* Arbitrary Argument Lists \*
* Documentation Strings
* Unpacking Argument Lists ( unknown number of parameters )
* Lambda Expressions

**Module 3 Functional Programming**

* Lambda Forms
* list comprehension
* isalpha
* map
* apply
* reduce ,filter

**Day 2:**

**Module 4 File handling and other OS interactions**

* Creating and Opening a File
* Reading from a file, writing to a file (variations)
* Closing a File
* Handling csv files

**Module 5 Modules**

* Executing modules as scripts
* The Module Search Path
* Building modules
* Running a module from the command line -m
* ‘Compiled’ Python files( .pyc )
* Standard Modules
* The dir() Function

**Module 6 Introduction to OOP**

* Class Definition Syntax
* Implication of **self**
* Class Objects, Instance Objects, Method Objects; Instantiation
* Constructor & Deconstructor
* Inheritance
* Data Member – Class variable/Instance Variable,local ,global variables

**Module 7 Exceptions**

* Handling Exceptions
* try-except
* else clause
* finally clause
* Raising Exceptions
* User-defined Exceptions Raise
* basic debugging
* pickle ( binary files )
* File compression & decompression
* OS, SYS and PPRINT modules

**Module 8 Regular expressions**

* What is regular expression?
* Matching characters
* Compiling regular expressions
* Meta characters like quantifiers, anchors, character classes, alternator etc.
* Strings and Slices
* Modifying Strings
* Use of triple quotes
* Repetition
* Group extraction and Substitution

**Day 3**

**Module 9**

**Multi-threaded Programming**

* Starting a New Thread
* The Threading Module
* Creating Thread Using Threading Module

**Module 10**

**REST API access**

* working with JSON
* using urllib3
* accessing urls with urllib3
* using requests module
* GET,POST using requests module

**Day 4**

**Module 11 Mysql**

* Mysql: DDl,DMl,DRL,constraints
* CRUD operations for a sample set of schemas.

**Module 12 PANDAS**

* Getting Started
* Series
* Data Frames
* Read CSV
* Read JSON
* Analysing Data

**Module 13 NUMPY**

\* Getting Started

\* Creating Arrays

\* Array Indexing

\* Array Slicing

\* Data Types

\* Copy vs View

\* Array Shape

\* Array Reshape

\* Array Iterating

\* Array Join

\* Array Split

\* Array Search

\* Array Sort

\* Array Filter

**DAY-5**

**Module-14**

**Flask & Microservices:**

* Flask installation and Views,Urls,Templates,Models
* Working with Python Web Frameworks (Overview of Django etc.),
* Design & Building RESTful APIs using Flask
* Python Hyper HTTP-2 Framework,
* Introduction to Microservices and Building Microservices on Python
* Connecting with Database and Developing Python UI
* Persistence data layer with SQL (MySQL) & No SQL (MongoDB)