PYTHON – INTERMEDIATE TO ADVANCED

COURSE OUTLINE (4 Days)

DURATION: 32 Hours

LAB SETUP DETAILS

OPERATING SYSTEM: Windows 7/10 or Any flavours of UNIX (Linux, HP-UX, Ubuntu, Solaris or MAC OS). PYTHON Supports Multiplatform.

RAM: 4GB RAM

HARD DISK SPACE: 100GB

SOFTWARES:

NOTE: In Flavours of UNIX, Python v3 will be installed by default and the packages will be installed during the training session.

a) Python v3.8 or higher – http://www.python.org/downloads
b) Anaconda Python – http://www.continuum.io/downloads

PRE-REQUISITES

The Trainee should have undergone 'PYTHON – BASICS TO INTERMEDIATE' Training.

Unit	Objective(s)
DAY 1	
Iterators and Generators	• Iterators • What is Generator • Generator Syntax • Communication with Generator • Iterables Vs Iterators • Generators in the Standard Library • When To Write Generators
Design Patterns OVerview	Singleton Factory Structural
Decorators	• Understanding Decorators • Decorator Syntax • Where Decorators are used • Why You Should Write Decorator • When To Write Decorators • Writing Decorators
Co-routiine	• Yield as consumer • Python co-routine to process log • solving producer and consumer problems
Classes and Objects	• Defining the Class • The '__init__' and '__str__' methods • Creating the Object • The 'self' parameter • Private and Public Attributes • Concept of Encapsulation • Concept of Polymorphism • Concept of Inheritance • Types of Inheritance – Single, Multiple, Multilevel and Hierarchial • Magic Methods • Method and Operator Overloading

Day 2

Data Structures	• linked lists, • trees • graphs,

	• and their associated algorithms.
Threads and Multiprocesses	• Why use threads? • Threads are different • Variables are shared • Python threads modules • The threading module • The queue module • The python thread manager • Debugging threaded programs • About GIL (Global Interpreter Lock)
Scoket	• Why socket • Create socket • Server and Client communication • Send and Receive data • Transfer file contents using sockets
Consume Rest API/Web Scraping	• Using requests • Get and Post data using request librarary • using SSL communication in requests library • Web scrapping using Beautiful soup • Using the scrapped contents

Day 3

Pandas	• Overview • Pandas Data Structure • Hierarchical Indexing • Querying Data in Pandas • Pandas Data Aggregation • Pandas Data Merging with Data Frame
Numpy	• Overview • Ndarray • Basic Operations • Indexing, Slicing, and Iterating • Conditions and Boolean Arrays • Shape Manipulation • Array Manipulation • General Concepts

	• Structured Arrays • Reading and Writing Array Data on Files
Scikit-Learn	• Overview • Standardizing Data • Normalizing Data • Performing Linear Regression • Supervised Learning with Scikit-Learn
Python DataScience	• Linear Regression • Logistic Regression • K Means • Support Vector Machines • Decision Tree
Day 4	•
Neura Networks	• Introduction to Neural Networks • Introduction to Perceptron • Neural Network Activation Functions • Cost Functions • Gradient Descent Backpropagation • Manual Neural Network Classification Task
Convolution Neural networks	• Introduction to Convolutional Neural Network Section • CNN Theory • CNN Project
TensoiFlow	▪ Introduction to TensorFlow ▪ TensorFlow Graphs ▪ Variables and Placeholders ▪ TensorFlow - A Neural Network ▪ TensorFlow Regression Example ▪ TensorFlow Classification Example