**Duration: 5 Days**

**Course Outline**

**Module 1: Introduction to Python**

* Introduction to Python
* Features of Python
* Why Python

**Module 2: Simple Program**

* Python shell
* Python command
* Prepare source File and execute the code
* Print “Hello World”
* Comments
* Help command

**Module 3: Basic Language Consructs**

* Data types and Variables
* String type
* Format method
* Operators and Expressions
* Indentation

**Module 4: Control Structure**

* If
* While loop
* For loop
* Break & Continue Statements

**Module 5: Functions**

* Simple Function declaration
* Function with parameter
* Variable Scope
* The “global” statement
* Function with default arguments
* Function with return type

**Module 6: Data Structures**

* List
* Tuple
* Dictionary
* Sequences
* Set

**Module 7: Modules**

* What is module?
* Use of modules
* Import statement
* Global and local module
* Standard library module
* User defined modules
* The dir() Function

**Module 8: Object Oriented Programming Concepts**

* Introduction to object oriented concepts
* Classes and Objects
* The “self” keyword
* Methods and Attributes
* Constructor and Destructor
* Instance and static member
* Class Inheritance
* Super keyword

**Module 8.1: Database Connectivity**

* Database Connection:
* Creating Database Table:
* INSERT Operation:
* READ Operation
* Update Operation:
* Performing Transactions:
* Handling Errors:

**Module 9: Files**

* What is File Input output?
* How to open a file
* How to close a file
* Read and write data to a file
* Pickle Module

**Module 10: Exception Handling**

* What is an Exception?
* Run time Exceptions
* try … except statements
* Multiple except statements
* Clean up statement (finally)
* Raised exceptions
* User defined exceptions

**Module 11: File and Directory handling**

* File I/O operations
* Built-in file and directory handling libraries
* fileinput
* stat
* filecmp and dircmp
* glob, zipfile and tarfile
* pickle and shelve modules
* Serialization using json

**Module 12: Regular Expression**

* Introduction to regexps
* Special symbols and characters for RE
* Metacharacters and Metasymbols
* Character classes
* Quantifiers and Positions
* Searching/Matching a string/pattern
* Search and replace operations
* Splitting and joining strings
* Practical examples

**Module 13: Itertools and Collections framework**

* Iterators and generators
* Collections
* Deque
* defaultdict

**Module 14: Testing**

* Using the unittest module for writing testcases
* Using doctest
* Regressing testing using test module

**Module 15: XML Parsing**

* Introduction
* Element Tree Module
* Dom
* Minidom

**Module 16: Socket Programming**

* What is Socket Programming?
* What is protocol?
* Types of protocol
* What is “host” and “port”
* socket class
* methods of socket class
* type of socket

**Module 17: Threading**

* What is process?
* What is thread?
* Thread class
* Life cycle of a thread
* Methods of thread class
* Time class
* Synchronization
* Lock class methods

**Module 18: Decorator**

* About Decorators
* Simple Function Decorators
* Decorator Example
* Classes as Decorators
* Decorator Arguments
* Exercises

**Module 19: Decorator**

* Working with REST APIs using Python
* How to use SSH API’s in python to connect with Python
* How to use SNMP in python
* Django module

Day 5

Case Study:

Setup a webserver that takes our inputs through http for below listed functions. The webserver will need to  provide a 2-factor authentication option for the users before taking their inputs,  The inputs may vary based on each of below listed tasks.

1. DNS creation on our DNS servers using REST API,

2. Load balancer/ Router configurations using SSH

3. Device configurations pull or put using SNMP

4. Compliance check of the device configurations based on step3

  The webserver should have the option to select the list of devices where we need to apply the configurations based on device type and model or make, The webserver will also need to have an input option for Ticket number and verify with External server to verify if the Ticket number is approved before proceeding with changes on devices.