**Python Course**

**Day 1: The Basics**

Session 1:

* Introduction
* Use cases of python
* Comparison with other programming languages
* Python interpretor, console.

Session 2:

* Basic Data Structures :
  1. int, float, str.
  2. Possible operations on above datatypes
* Variables
* Dynamic typing

Session 3:

* Basic Programming constructs:
* Conditions : If, else, elif
* Loops: while, break, continue, for
* Interactive mode, file mode, dir, help, type
* Advanced Data Structures: Containers – list, tuple, dictionary, set,Frozenset

Session 4:

* range, xrange
* Directory
* Python Standard Library (introduction):
  1. Os, sys module as examples
* Excercises

End of day 1

**Day 2: Functions, Classes and Modules**

Session1:

* Functions (Advanced):
  + Syntax
  + Invocation
  + Parameter passing
  + Parameter passing with names
  + Idea of pass by reference
  + Recursion
  + Nesting of functions

Session 2:

* Object Oriented Concepts:
  + Python objects
  + Classes
  + creation of object
  + inheritance
  + class attribute
  + operator overloading
  + method overriding

Session 3:

* Modules
  + concept
  + .py and .pyc files
* Basic Exception Handling:
  + Significance
  + Common exceptions
  + Usage - try, except, raise, else, finally

Session 4:

* File handling:
  + Open, read, write, delete files
* Excercises

End of Day2

**Day 3: Advanced Python:**

Session 1:

* List Comprehensions, Dictionary Comprehensions
* Functional Programming Concepts: Map, Filter, Reduce.
* Excercises

Session 2

* Higher order Functions
* Decorators
* Excercises

Session 3:

* Python package
* 3rd party libraries
* pip, easy\_install
* Debugging : pdb, stack trace.

**Session 4:**

* Testing: unittest, doctest, pytest, mock, nose, coverage
* Regular Expressions

End of Day 3

**Day 4:Advanced Python – Continued**

Session 1:

* Asynchronous Programming
* Threads
* Processes
* Global Interpreter Lock
* asyncio (basic)

Session 2:

* Networking: ssh, telnet, http
* Subprocess

Session 3:

* Parsing

1. ConfigParser
2. HTML Parser
3. XML Parser

Session 4:

* Python extensions: ctypes (basic)
* Useful python libraries:
  1. collections, requests, time
* Guide on further learning.

End of day 4