



## **Python syllabus**

### 1. Introduction to Python

History of Python

Why to learn python

How is Python Different?

Installing Python

### 2. Python Interpreter

Using the interpreter

Integrated Development Environments (IDE)

How to run Python programs?

### 3. Basics of Python

Variable

Keywords

Statements & Comments

Indentation

Data types

Static Typing vs Dynamic Typing

Input and output

### 4. Operators

Arithmetic operator

Relational Operator

Assignment Operator

Logical operator

Bitwise operator

Membership Operator

Identity Operator

## 5. Control Flow

If statement

If - else

If – elif -else

Nested if - else

    while loop

for – in loop

Nested loop

Loop with else

Pass statement

Break and continue

## 6. Functions

Function Basics

Defining function

function call

Return statement

Function parameters

Call by value or call by reference

local and global variable

Recursion

Anonymous (lambda) function

## 7. Modules

Defining module

How to create module

Importing module

Dir()

Module search path

Reloading a module

Sys module

Os module

namespace

## 8. Package

Defining package

How to create package

Importing package

Installing third party packages

## 9. Numeric types

Numeric type basics

Numbers

Hexadecimal, Octal and Binary Notation

Complex Numbers

Type casting

Numeric Functions

Random number generation

## 10. String

Defining a string

Different ways to create string

Accessing elements of string

Escape sequence

Raw string

String methods

String formatting Expressions

## 11. List

Defining a list

Creating list

Accessing list elements of list

Deleting list

List methods

Functions used with list

List comprehension

Implementation of stack and queue using list

Use of Zip ()

Matrix operations using list

## 12. Tuple

Defining a tuple

Creating a tuple

Accessing elements of tuple

Immutability

List vs tuples

Tuple Methods

Functions used with tuple

Advantage of Tuple

### 13. Dictionary

Defining a dictionary

Creating a dictionary

Accessing elements of dictionary

Deleting a dictionary

Dictionary methods

Dictionary Comprehension

### 14. Set

Defining a set

Creating set

Set operations

Set methods

Set comprehension

### 15. Files

Defining a file

Types of file

File operations

Opening a File

Closing file

File modes

File attributes

Writing to file

Reading from file

Appending to file

File positions

Binary file

Pickle module

## 16. Exception Handling

Defining an exception?

Default exception handler

Exception handling techniques

Detecting Exception (try)

Catching exceptions (catch)

Catching multiple exceptions

Raising exception (raise)

Finally block

User defined exceptions

## 17. Object Oriented Programming

Oop concepts

Defining a class

Creating object

Method vs function

Calling methods

Instance attribute vs class attribute

Instance method vs class method

Private attribute and method

Static method

Method Overloading

Constructor

List of objects

Inheritance

Method overriding

Operator overloading

Abstract method

Abstract class

## 18. Multi Threading

Process based multi tasking

Thread based multi tasking

Creating aThread without using class

Creating thread using class

Sleep() method

Join() methos

Getting and setting name of Thread

Logging module

Synchronization

Lock concept

Inter thread communication

Is\_Alive() method

Active\_count() method

Enumerate() method

Current\_thread() method

Daemon Thread

## 19. GUI Programming with Tkinter

Introduction to tkinter

Creating a window

Tkinter widgets

o Label

o Button

o Entry

o MessageBox

o List

o Radio Button

o CheckButton

Creating Frame

Creating Menu



## Assignments on tkinter

### 20. Event handling

Defining an event

Bind() method

Mouse events

Keyboard events

### 21. Data Base Programming

Introduction to Sqlite module

Connecting to database by using sqlite3

Creating table by sqlite3

Performing sql operations

Introduction to mysql

Installing mysql

Creating database using mysql

Connecting mysql database from python

Creating table

Performing sql operations

### 22. Networking

Introduction to Network programming

Ip address

Port Number

Socket module

Server socket

Client socket

Socket methods

TCP socket

UDP socket

#### 24. Conversion of Python script to executable file

Defining an executable file

Installing cx\_Freeze module

Importing setup and Executable

Deploying the application

#### 25. Additional Concepts

Numpy

Scipy

Pandas

Anaconda

Django