

# Python Course Syllabus

## Course Introduction

• In this Introduction, you will learn what will be taught in this course and benefits of this course.

## Python Introduction

- What is Programming?
- What is Coding?
- Python Library
- Python Modules
- Python Webframework
- Flavours of Python
- What can Python do?
- Why Python?
- Python Syntax compared to other programming languages
- Python Installation

## Fundamentals of Python

- The print statement
- Comments
- Python Data Structures & Data Types
- String Operations in Python
- Python keywords
- Python Variables
- Python Type Conversions
- Simple Input & Output

## Python Operators

- Arithmetic operators
- Assignment operators
- Comparison operators & Logical operators
- Identity operators
- Membership operators & Output
- Simple Output Formatting

## Python Conditional Statements

- Indentation
- The If statement and its' related statement
- An example with if and its' related statement
- Else
- Nested If
- Short Hand If
- Short Hand If else & Continue
- Examples for Conditional Statements

## Python Iterative Statements

- Indentation
- The for statement and its' related statement
- An example with for and its' related statement
- While
- Nested for
- Nested While
- Examples for Looping Statements

## Python Jumping Statements

- Indentation

- The Break statement and its' related statement
- An example with Break and it's related statement
- Continue
- Pass
- Examples for Jumping Statements

## Python Strings

- String Introduction
- String object basics
- String methods
- Splitting and Joining strings
- String format functions

## Python Lists

- List basics
- List methods
- Nested List
- List comprehensions

## Python Tuples

- Introduction to Tuples
- Tuples with built-in functions
- Tuple operations

## Python Sets

- Introduction to Sets
- Sets with built-in functions
- Set Operations

- Set with functions

## Python FrozenSet

- Introduction to FrozenSet

## Python Dictionary

- Introduction to
- Dictionary
- Dictionary

## Python Functions

- Defining a function
- Calling a function
- return statement
- Difference between return and print
- Arguments
- Parameters
- Keyword arguments
- Arbitrary argument
- User defined functions
- Nested functions
- Functions with real time examples

## Advanced Python Functions

- Lambda function
- Map function
- return statement vs Yield
- Difference between return and print

- filter Function
- Generator
- Reduce Function
- Yield Keyword
- Advanced Functions with real time examples

## Object-oriented Programming with Python

- Introduction to Classes
  - Creation of Classes
  - Real time examples of Classes
- Creation of Classes
- Real time examples of Classes
- Creation of Objects
- init
- self keyword
- super keyword
- Inheritance
- Types of Inheritance:
  - Single Inheritance.
  - Multiple Inheritance.
  - Multi-Level Inheritance.
  - Hierarchical Inheritance.
- Single Inheritance.
- Multiple Inheritance.
- Multi-Level Inheritance.
- Hierarchical Inheritance.
- Polymorphism:
  - Method overloading

- Method overriding
- Method overloading
- Method overriding
- Encapsulation
  - Private
  - Public
  - Protected
- Private
- Public
- Protected
- Data Abstraction
  - Abc class
  - Abstract method
  - Realtime example of Data Abstraction
- Abc class
- Abstract method
- Realtime example of Data Abstraction

## File Handling with Python

- Introduction to File Handling
- File modes
- with keyword
- Working with files
- Reading and writing files
- Buffered read and write
- Other File methods
- Tell Function
- Read Line Function

- Read Lines Function
- WriteLines Function
- Other File methods
- Seek Function

## Exception Handling with Python

- Using standard module
- Creating new modules
- Exceptions Handling with Try-except
- Creating, inserting and retrieving table
- Updating and deleting the data

## Python Numpy

- Introduction to Numpy
- Numpy Installation
- NumPy - Ndarray Object
- NumPy - Data Types
- NumPy - Array Attributes
- NumPy - Array Creation Routines
- NumPy - Array from Existing Data
- Array From Numerical Ranges
- NumPy - Indexing & Slicing
- NumPy - Advanced Indexing
- NumPy - Broadcasting
- NumPy - Iterating Over Array
- NumPy - Array Manipulation
- NumPy - Binary Operators
- NumPy - String Functions

- NumPy - Mathematical Functions
- NumPy - Arithmetic Operations
- NumPy - Statistical Functions
- Sort, Search & Counting Functions
- NumPy - Byte Swapping
- NumPy - Copies & Views
- NumPy - Matrix Library
- NumPy - Linear Algebra

## Data Preprocessing with Python Pandas

- Introduction to Pandas
- Pandas Installation
- Python Pandas - Series
- Python Pandas - DataFrame
- Python Pandas - Panel
- Python Pandas - Basic Functionality
- Descriptive Statistics
- Function Application
- Python Pandas - Reindexing
- Python Pandas - Iteration
- Python Pandas - Sorting
- Working with Text Data
- Options & Customization
- Indexing & Selecting Data
- Statistical Functions
- Python Pandas - Window Functions
- Python Pandas - Date Functionality
- Python Pandas - Timedelta



- Python Pandas - Categorical Data
- Python Pandas - Visualization
- Python Pandas - IO Tools

## Data Visualization With Python Library

- Matplotlib
- Matplotlib Introduction
- Bar Plot
- Pie Chart
- BoxPlot
- HeatMap
- Histogram
- Small Project using Matplotlib

## Advanced Python Multithreading

- What is Multi Threading
- Multi Threading vs Multi Processing
- Thread class
- Thread Life Cycle
- Methods of Multi Threading in Python
- Examples of MultiThreading

## Advanced Python WebScraping

- What is Web Scraping?
- What is Beautifull Soap?
- Request Module
- Json Module
- Saving Scraped Data

# Real time WebScraping project

- Scraping data from E-commerce websites.

# Advanced Python Regular Expression

- Split
- Working with special characters, date, emails
- Quantifiers
- Match and find all
- character sequence and substitute
- Search method

# Git & GitHub

- Github Introduction
- Account creation
- Github Repository
- Pushing Projects
- Pulling Projects
- ReadME File
- Git Introduction
- Git Installation
- Git Clone
- Git Status
- Git Add
- Git Commit
- Git Push
- Git Pull
- Git vs Github

# PowerBI

- PowerBI Introduction
- PowerBI Installation
- PowerBI Query Editor
  - Introduction to PowerBI Query
  - Load
  - Transform
  - Extract
  - Data types and Filters in PowerBI Query
  - Inbuilt Column Transformations
  - In built Row Transformations
- Introduction to PowerBI Query
- Load
- Transform
- Extract
- Data types and Filters in PowerBI Query
- Inbuilt Column Transformations
- In built Row Transformations
- PowerBI Pivot table
- Report
- Table
- Models
- Visualization Charts
- Fields
- Analysis of Data
- Creating Dashboards
- Running Python Scripts
  - Data Visualization using PowerBI with Realtime Data sets

- Data Visualization using PowerBI with Realtime Data sets

## Exploratory Data Analysis with Python

- Data Gathering
- Data Preprocessing
- Data Visualization
- RealTime Eda Project

## Hyper Text Markup Language (HTML)

- HTML Introduction
- HTML Editor Installation
- HTML Basics
- HTML Elements
- HTML Attributes
- HTML Headings
- HTML Paragraphs
- HTML Formatting
- HTML Comments
- HTML Colors
- HTML Links
- HTML Images
- HTML Head
- HTML Forms
- HTML Tables
- HTML Lists

## Cascading Style Sheets (CSS)

- CSS Introduction

- CSS Syntax
- CSS Selectors
- CSS Comments
- CSS Colors
- CSS Backgrounds
- CSS Borders
- CSS Padding
- CSS Text
- CSS Fonts
- CSS Icons
- CSS Links
- CSS Lists
- CSS Tables

## SQL with Python Programming

- MySQL Get Started
- My SQL Installation
- My SQL Work Bench
- Data Defination Language
- Data Manipulation Language
- Data Control Language
- Data Transaction Language
- My SQL Connection With Python
- MySQL Create Database
- MySQL Create Table
- MySQL Insert
- MySQL Select
- MySQL Where

- MySQL Drop Table
- MySQL Join

## FastAPI

- Overview of FastAPI
- Basic Application Structure
- Path and Query Parameters
- Request Body and Data Models
- Response Handling
- Background Tasks and Middleware
- Sample project