

Python Syllabus

Module 1: An Introduction to Python

- ❖ What can Python do?
- ❖ Why Python?
- ❖ Good to know
- ❖ Python Syntax compared to other programming languages
- ❖ Python Install

Module 2: Beginning Python Basics

- ❖ The print statement
- ❖ Comments
- ❖ Python Data Structures & Data Types List/Set/Tuple/Dict/Frozen Set etc.
- ❖ Data Structures- Array/Stack/Queue/Linked List (singly, doubly, circular)/Hash table
- ❖ String Operations in Python
- ❖ Simple Input & Output
- ❖ Simple Output Formatting
- ❖ Operators in python

Module 3: Python Program Flow

- ❖ Indentation
- ❖ The If statement and its' related statement
- ❖ An example with it and its related statement
- ❖ The while loop
- ❖ The for loop
- ❖ The range statement
- ❖ Break & Continue

- ❖ Assert
- ❖ Examples for looping

Module 4: Functions & Modules

- ❖ Create your own functions
- ❖ Functions Parameters
- ❖ Variable Arguments
- ❖ Scope of a Function
- ❖ Function Documentations
- ❖ Lambda Functions
- ❖ Exercise with functions

Module 5: Exceptions Handling

- ❖ Exception vs Errors
- ❖ Understanding Exception Hierarchy
- ❖ Exception handling with try/except/else/raise
- ❖ Handling Multiple Exceptions
- ❖ Writing your own /custom Exceptions

Module 6: File Handling

- ❖ File handling Modes
- ❖ Reading Files
- ❖ Writing & Appending to Files
- ❖ Handling File Exceptions
- ❖ The with statement and Context Manager

Module 7: Classes in Python

- ❖ Creating Classes/Objects/Methods
- ❖ Instance/Static/Class Methods
- ❖ Instance/Class/Global/Nonlocal/Local Variables
- ❖ Inheritance/Polymorphism/Encapsulation/MRO
- ❖ Exception Classes & Custom Exceptions with examples

Module 8: Advanced Python Concepts

- ❖ Iterators / Generators / Decorators
- ❖ Property/ Assertion/ Closures
- ❖ Itertools / Lambda with examples in detail
- ❖ Types of Functions

Module 9: Python SQL Database Access

- ❖ Introduction
- ❖ DB Installation
- ❖ DB Connection
- ❖ Creating DB Table
- ❖ INSERT, READ, UPDATE, and DELETE operations
- ❖ COMMIT & ROLLBACK operation
- ❖ Handling Errors

Module 10: Collections

- ❖ Namedtuple
- ❖ Deque
- ❖ ChainMap
- ❖ Counter
- ❖ OrderedDict

- ❖ Defaultdict

Module 11: Regular Expression

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

Module 12: Threads ESSENTIAL

- ❖ Class and threads
- ❖ Multi-threading
- ❖ Synchronization
- ❖ Threads Life cycle
- ❖ Use cases

Flask Web Framework

- **What Is Flask**
 - ❖ What Is Flask Used For
 - ❖ Prerequisites
 - ❖ Create A Flask App
 - ❖ Flask Hello World
 - ❖ Testing The Flask Application
 - ❖ Push Project into GitHub Repo

- ❖ Routing
- ❖ Variable rules
- ❖ HTTP Method Flask Framework
- ❖ Flask Framework Templates
- ❖ Flask Framework Static Files
- ❖ Flask Framework Static Files
- ❖ Request/ Response Object
- ❖ Session/Cookies
- ❖ Redirects & Errors
- ❖ File Uploading
- ❖ SQLite
- ❖ Flask-Sqlalchemy, Database connection with Mysql/Postgres
- ❖ Flask Sqlalchemy CRUD Example
- ❖ Flask WTFForms
- ❖ Flask – REST API with Postman end to end Example

Django Web Framework

- ❖ Introduction to Django
- ❖ Django vs Flask
- ❖ Creating a simple Project with Django Framework
- ❖ Admin Module/User creation/Group creation

- ❖ Connecting Django Application with Database
- ❖ Django Project Structure
- ❖ Request-Response Cycle
- ❖ Django – Function based and Class based Views
- ❖ Rest Framework with Serialization - DRF
- ❖ Django Swagger Integration Example
- ❖ APIs Authentication and Permission classes
- ❖ Django Commands with Example
- ❖ Django Middlewares
- ❖ Deployment on Anywhere
- ❖ Django Types of Viewsets/ User defined Viewsets
- ❖ Django Types of Serializers/ User defined Viewsets
- ❖ Django Types of Permission classes/User defined Permission classes
- ❖ Django Types of Routers
- ❖ Inheritance Strategies
- ❖ Default and Custom Managers in Django

Tools and Frameworks Covered

- ❖ Postman
- ❖ GitHub
- ❖ Jira
- ❖ Trello
- ❖ SDLC
- ❖ Company Norms
- ❖ CTC Components
- ❖ Selenium
- ❖ Database – Mysql / Postgres
- ❖ Pycharm
- ❖ Project Methodologies – Agile/Waterfall/V-Model
- ❖ Design Patterns
- ❖ UnitTest/PyTest
- ❖ Requests Lib