

Python Certification Course

Course Duration : 45 Days

Topics & Details

Introduction to Python:

- ★ What is Python?
 - Overview of Python
 - History and features of Python
- ★ Setting Up the Environment
 - Installing Python
 - Setting up an IDE (PyCharm, VSCode, Jupyter Notebook)
- ★ Writing Your First Python Program
 - Running a Python script
 - Introduction to the Python shell

Lesson 2: Python Basics

- ★ Basic Syntax
 - Python syntax and indentation
 - Comments
- ★ Variables and Data Types
 - Declaring variables
 - Basic data types: integers, floats, strings, booleans
- ★ Operators
 - Arithmetic operators
 - Comparison operators
 - Logical operators
 - Assignment operators



Lesson 3: Control Flow

- ★ Conditional Statements
 - If, else, and elif statements
- ★ 2. Loops
 - For loop
 - While loop
 - Nested loops
- ★ Control Statements
 - Break, continue, and pass

Lesson 4: Data Structures

- ★ Lists
 - Creating and accessing lists
 - List methods
- ★ Tuples
 - Creating and accessing tuples
 - Differences between lists and tuples
- Dictionaries
 - Creating and accessing dictionaries
 - Dictionary methods
- ★ Sets
 - Creating and accessing sets
 - Set methods

Lesson 5: Functions

- ★ Defining Functions
 - Function syntax



- Function arguments and return values

★ Lambda Functions

- Syntax and usage of lambda functions

★ Built-in Functions

- Commonly used built-in functions (e.g., `len()`, `max()`, `min()`)

Lesson 6: Modules and Packages

★ Importing Modules

- Importing built-in modules
- Creating and importing custom modules

★ Packages

- Creating and using packages
- `__init__.py` file

Lesson 7: File Handling

★ Reading and Writing Files

- Opening, reading, and writing files
- File modes (`'r'`, `'w'`, `'a'`, `'b'`, etc.)

★ Working with File Paths

- Using the `'os'` module for file operations

Lesson 8: Error and Exception Handling

★ Introduction to Exceptions

- What are exceptions?
- Handling exceptions with `'try'`, `'except'`, `'finally'`

★ Raising Exceptions

- Using `'raise'` to trigger exceptions

★ Custom Exceptions



- Creating custom exception classes

Lesson 9: Object-Oriented Programming (OOP)

★ Classes and Objects

- Creating classes and objects
- Instance variables and methods

★ Inheritance

- Inheriting from a superclass
- Method overriding

★ Polymorphism

- Implementing polymorphism
- Abstract classes and methods

★ Encapsulation

- Private and protected members

Lesson 10: Working with Libraries

★ NumPy

- Introduction to NumPy
- Creating and manipulating arrays

★ Pandas

- Introduction to Pandas
- DataFrames and Series

★ Matplotlib

- Introduction to Matplotlib
- Creating basic plots and charts

★ Requests

- Introduction to the Requests library



- Making HTTP requests

Lesson 11: Working with Data

- ★ Reading and Writing Data
 - CSV, JSON, and Excel files
- ★ Data Cleaning and Manipulation
 - Handling missing data
 - Data transformation

Lesson 12: Web Scraping

- ★ Introduction to Web Scraping
 - What is web scraping?
 - Legal considerations
- ★ Using BeautifulSoup
 - Parsing HTML
 - Extracting data from web pages
- ★ Using Selenium
 - Introduction to Selenium
 - Automating web browser interaction

Lesson 13: Working with APIs

- ★ Introduction to APIs
 - What is an API?
 - Using REST APIs
- ★ Making API Requests
 - Using the Requests library to interact with APIs
 - Parsing JSON responses



Lesson 14: GUI Programming

- ★ Introduction to Tkinter
 - Creating a basic GUI application
- ★ Widgets and Layouts
 - Common widgets (buttons, labels, text fields)
 - Arranging widgets in a window

Lesson 15: Testin

- ★ Introduction to Testing
 - Importance of testing
 - Types of testing
- ★ Unit Testing
 - Using the `unittest` module
 - Writing and running test cases
- ★ Test-Driven Development (TDD)
 - Writing tests before code
 - Refactoring based on tests

Lesson 16: Advanced Topics

- ★ Decorators
 - Understanding and using decorators
- ★ Generators
 - Creating and using generators
 - `yield` keyword
- ★ Context Managers
 - Using `with` statements
 - Creating custom context managers



