

Python Certification Course

Course Duration : 60 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

