AdlerTech Innovations - Python Course Syllabus

Module 1: Introduction to Python

- Why Python? Career scope & applications
- Setting up Python & IDEs (VS Code, Jupyter)
- Writing your first Python program
- Python syntax, comments, and basic input/output

Module 2: Core Programming Concepts

- Variables and Data Types (int, float, str, bool)
- Type casting and basic operations
- Conditional Statements (if, elif, else)
- Loops (for, while, break, continue)

Module 3: Data Structures in Python

- Lists and list methods
- Tuples and immutability
- Dictionaries and key-value pairs
- Sets and set operations

Module 4: Functions & Modules

- Defining and calling functions
- Function arguments, return values
- Lambda functions
- Modules, importing, and Python packages (math, random, etc.)

Module 5: File Handling & Error Management

- Reading and writing files (text, CSV)
- Exception handling using try, except, finally
- Real-world use: Logging and error tracking

Module 6: Object-Oriented Programming (OOP)

- Classes and objects
- Constructors, attributes, and methods
- Inheritance and method overriding
- Encapsulation and abstraction

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Module 7: Working with Libraries

- Introduction to pip and virtual environments
- Overview of essential libraries:
- - pandas (data analysis)
- - matplotlib (basic data visualization)
- - requests (API handling)
- - datetime, json, os, etc.

Module 8: Projects & Real-World Practice

- Mini Project 1: Console-based app (e.g., To-Do List or Calculator)
- Mini Project 2: Data analyzer using pandas
- Mini Project 3: API automation or web scraping
- Resume-building and mock interview session

Bonus (Optional Advanced Topics)

- Basics of Django/Flask for web development
- Introduction to Git & GitHub
- Python in job interviews - real questions & answers