



PYTHON

COURSE

Prepared By (CTO) SYNTHOQUEST

45 Days Duration

Duration: 45 days × 2 hrs/day = 90 hrs

Goal: Equip learners with fundamental and advanced Python skills for software development, automation, data analysis, and web development.

Core Domains

1. Introduction to Python & Setup (5%)

- Python history, features, applications
- Installing Python, IDEs (VS Code, PyCharm, Jupyter)
- Python REPL, scripts, and execution

2. Basic Syntax & Data Types (10%)

- Variables, data types (int, float, string, boolean)
- Typecasting, input/output
- Operators, expressions, and precedence

3. Control Structures (10%)

- Conditional statements: if, elif, else
- Loops: for, while, nested loops
- Break, continue, pass

4. Functions & Modules (10%)

- Defining functions, parameters, return values
- Lambda functions, built-in functions
- Modules, packages, and importing

5. Data Structures (15%)

- Lists, tuples, sets, dictionaries
- Operations, slicing, comprehension
- Stack, queue, and basic algorithms

6. File Handling (5%)

- Reading/writing files (text, CSV, JSON)
- Context managers, file operations
- Exception handling

7. Object-Oriented Programming (15%)

- Classes, objects, methods, attributes
- Inheritance, polymorphism, encapsulation
- Magic methods and decorators

8. Libraries & Frameworks (15%)

- NumPy and Pandas for data manipulation
- Matplotlib & Seaborn for data visualization
- Requests, BeautifulSoup for web scraping
- Flask/Django introduction for web development

9. Advanced Topics & Best Practices (15%)

- Exception handling, logging, debugging
- Virtual environments, pip, requirements.txt
- REST API consumption, automation scripts
- Code organization, PEP8, and best practices

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