



PYTHON DEVELOPER SYLLABUS

1. Introduction to Python

Overview of Python and its history.

Setting up the development environment (IDEs: PyCharm, VS Code, Jupyter Notebook).

Basic syntax and structure of a Python program.

Understanding Python versions (2.x vs 3.x).

2. Python Fundamentals

Data types (integers, floats, strings, booleans).

Variables and constants.

Control structures (if, else, elif, loops).

Functions and parameters.

Working with lists, tuples, sets, and dictionaries.

String manipulation and formatting.

3. Object-Oriented Programming (OOP)

Classes and objects.

Inheritance, polymorphism, encapsulation, and abstraction.

Special methods (dunder methods).

Composition vs. inheritance.

4. Advanced Python Concepts

Exception handling (try, except, finally).

File I/O (reading/writing files).

Modules and packages.

Decorators and generators.

List comprehensions and lambda functions.

Regular expressions.

5. Python Libraries and Frameworks

Introduction to popular libraries:

NumPy for numerical operations.

Pandas for data manipulation and analysis.

Matplotlib and Seaborn for data visualization.

Requests for making HTTP requests.

Web frameworks:

Flask for lightweight web applications.

Django for full-fledged web applications.

6. Data Handling and Databases

Working with CSV, JSON, and XML files.

Introduction to SQL and relational databases (SQLite, PostgreSQL).

Using SQLAlchemy for ORM.

7. Testing and Quality Assurance

Unit testing with unittest and pytest.

Test-Driven Development (TDD) principles.

Code quality tools (pylint, black, flake8).

8. Version Control and Development Tools

Using Git for version control.

Understanding Git workflows (branching, merging).

Development environments (virtual environments, pipenv, conda).

9. Building and Deploying Applications

Packaging Python applications (setup.py, wheel).

Deployment strategies (local, cloud).

Continuous Integration/Continuous Deployment (CI/CD) with tools like GitHub Actions or Travis CI.

10. Security Best Practices

Secure coding practices.

Understanding common vulnerabilities (SQL injection, XSS).

Using libraries for security (e.g., cryptography).

11. Performance Optimization

Profiling and monitoring applications.

Memory management and optimization techniques.

Caching strategies (using Redis or Memcached).

Additional Topics (Optional)

Working with APIs (RESTful APIs, GraphQL).

Asynchronous programming with async/await.

Machine Learning with libraries like scikit-learn or TensorFlow.

Data Science and analysis with Jupyter Notebooks.

◆◆ NEWGEN CORPORATE TRAINING CENTER ◆◆

OFFLINE / ONLINE BATCH

Address: NEWGEN CORPORATE TRAINING CENTER, Bremen Chowk, No. 217, West Avenue, Above
Atithi Hotel, Aundh, Pune – 411027

URL: <http://www.newgensofttech.com>

Mail Id: balkrishna8588@gmail.com

Insta Id: @Newgen_Softech