

Python Learning Roadmap

Phase 1: Fundamentals (Weeks 1–3)

📌 Goals: Build strong basics

Topics:

- What is Python & installation
 - Variables, Data Types
 - Operators
 - Conditional Statements (if/else)
 - Loops (for, while)
 - Functions & Scope
 - Basic Input/Output
 - Error Handling (try/except)
 - Coding practice (HackerRank / LeetCode)
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Phase 2: Data Structures (Weeks 4–5)

📌 Topics:

- Lists (CRUD operations)
- Tuples

- Sets
 - Dictionaries
 - Strings (advanced operations)
 - List Comprehension
 - Lambda, Map, Filter, Reduce
 - Practice mini-projects (calculator, todo app, menu-driven program)
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Phase 3: Object-Oriented Programming (Weeks 6–7)

Topics:

- Classes & Objects
 - Constructor
 - Inheritance
 - Polymorphism
 - Encapsulation
 - Abstraction
 - Magic/Dunder Methods
 - OOP Mini Projects (Banking system, Student management)
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Phase 4: File Handling & Modules (Week 8)

Topics:

- Reading/Writing files
 - Working with CSV, TXT, JSON
 - Creating and importing modules
 - Virtual environments
 - pip package manager
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Phase 5: Databases (Week 9)

Topics:

- SQL basics
 - CRUD operations
 - MySQL / SQLite with Python
 - Database mini project
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Phase 6: Python Libraries (Weeks 10–12)

Libraries to Master:

- NumPy
- Pandas
- Matplotlib
- Seaborn
- Requests

- Regular Expressions
 - Python Automation (os, shutil, datetime)
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Phase 7: Web Development With Python (Weeks 13–15)

Topics:

- Flask basics
 - Django basics
 - Templating
 - API creation
 - Authentication
 - Mini Project → Blog App / Ecommerce Backend
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Phase 8: Data Science & Machine Learning (Weeks 16–20)

Topics:

- Data Cleaning
- Data Wrangling
- Visualisation
- Feature Engineering
- ML Algorithms (Scikit-learn)

- Train/Test Split
 - Model Evaluation
 - Real-world ML Projects
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Phase 9: Automation & Scripting (Weeks 21–22)

Topics:

- Automating files/folders
 - Web scraping (BeautifulSoup, Selenium)
 - Task automation scripts
 - Email automation
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Phase 10: Advanced Python (Weeks 23–24)

Topics:

- Generators
 - Decorators
 - Multi-threading
 - Async/Await
 - APIs & Microservices
 - Design Patterns
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Phase 11: Portfolio + Projects (Weeks 25–28)

📌 Must Build Projects:

- Python automation tools
 - Web scraping pipeline
 - ML model deployment
 - Django/Flask full project
 - Data dashboard project
 - REST API project
 - Portfolio website + GitHub clean structure
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Phase 12: Job Preparation (Ongoing)

📌 Requirements:

- 10+ projects
 - Strong GitHub profile
 - Resume targeting Python/ML roles
 - DSA practice (medium level)
 - Mock interviews
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Python Job Roles & Salary (India)

Role	Salary (INR/year)
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Python Developer ₹4.5–12 LPA

Django/Flask Developer ₹5–15 LPA

Data Analyst ₹4–10 LPA

Data Scientist ₹8–25 LPA

ML Engineer ₹10–30 LPA

Automation Engineer ₹4–12 LPA

Backend Engineer ₹8–20 LPA