Python Full-Stack Developer Roadmap with DevOps (1-Year Plan)

This roadmap balances **core Python**, **web development (frontend + backend)**, **cloud (AWS)**, and **containerization (Docker)**—ideal for a **modern Python developer or full-stack engineer**.

🗓□ Month 1-2: Core Python Fundamentals

📍 Goals:

- Master Python syntax and write small programs
- Understand core programming principles

✔ Topics:

- Data types, variables, operators
- Conditionals, loops
- Functions
- Strings, Lists, Tuples, Dictionaries, Sets
- Exception Handling
- File Handling
- Pythonic code & list comprehensions

□ Tools:

- Python 3.x
- Jupyter Notebooks or VSCode
- `venv`, `pip`

□ Practice:

- HackerRank / LeetCode (Easy)
- Build: Calculator, Note-taker, To-do CLI app

🗓□ Month 3: OOP + Modules + Standard Libraries

📍 Goals:

- Write scalable, reusable code

✅ **Topics:**

- Classes, Objects
- Inheritance, Polymorphism, Encapsulation
- Special Methods (`__init__`, `__str__`)
- Creating and using Modules
- Useful Libraries: `os`, `datetime`, `random`, `math`, `collections`, `itertools`

💡 **Mini Projects:**

- Bank Management System
- Library Inventory Tracker

🗓️□ Month 4: Data Structures, Algorithms, and Problem Solving

💡 **Goals:**

- Write optimized code and prepare for technical interviews

✅ **Topics:**

- Arrays, Lists, Stacks, Queues
- Hashmaps (Dictionaries)
- Trees, Graphs, Recursion
- Searching, Sorting
- Time/Space complexity (Big-O)

□ **Practice:**

- LeetCode / GeeksforGeeks / NeetCode

🗓️□ Month 5: Web Development – Backend with Flask or Django

💡 **Goals:**

- Build backend web services and REST APIs

✅ **Topics:**

- HTTP, REST, Routing

- Flask or Django (choose one)
- Templating (Jinja2)
- ORM (SQLAlchemy or Django ORM)
- Authentication & Authorization
- CRUD operations
- API development

💡 **Projects:**

- Blog API
- User Management System
- Notes App with Login

1️⃣ Month 6: Frontend – HTML, CSS, JavaScript + React

🔍 **Goals:**

- Build dynamic, user-friendly interfaces

✅ **Topics:**

- HTML5 + Semantic Tags
- CSS3, Flexbox, Grid
- JavaScript (ES6+): Variables, Functions, DOM, Fetch API
- React.js basics: Components, Props, State, Hooks
- Integrate with your Flask/Django backend

💡 **Projects:**

- Todo App (React + Flask)
- Weather Dashboard (React + API)

1️⃣ Month 7: Database + Advanced Web

🔍 **Goals:**

- Learn to store, retrieve, and secure data

✅ **Topics:**

- Relational DBs: MySQL or PostgreSQL
- NoSQL: MongoDB basics

- Advanced Django or Flask:
  - Class-based views
  - Middleware
  - API versioning
  - Pagination
- JWT, OAuth

□ **Tools:**

- `psycopg2`, `SQLAlchemy`, `MongoEngine`, `Django REST Framework`

💡 **Projects:**

- Blog with Comments and Auth
- Ecommerce REST API

🗓 □ Month 8: DevOps – Docker + Git + GitHub + CI/CD

💡 **Goals:**

- Learn to containerize and automate deployments

✔ **Topics:**

- Git basics: `clone`, `commit`, `branch`, `merge`
- GitHub Projects & Actions
- Docker:
  - Dockerfile
  - Images & Containers
  - Docker Compose
- CI/CD Pipelines using GitHub Actions
- Linting and Unit Testing (`pytest`, `unittest`)

💡 **Projects:**

- Dockerize Flask/Django + React App
- Setup GitHub CI/CD with Tests

🗓 □ Month 9: Cloud – AWS (Beginner to Intermediate)

💡 **Goals:**

- Deploy and scale apps using AWS

✅ **Topics:**

- EC2: Launch & connect via SSH
- S3: Store media/files
- RDS: Host MySQL/PostgreSQL
- IAM Roles, Security Groups
- Deploy Flask/Django app on EC2
- Elastic Beanstalk (optional)
- AWS Lambda (optional for serverless)

💡 **Projects:**

- Deploy a Portfolio site on EC2
- Upload & retrieve files from S3

1️⃣□ Month 10: Specialization (Pick One)

Choose based on your long-term goal:

◆ Web Full Stack (Advanced Django/Flask + React)

- Full CRUD WebApp with Admin
- JWT Auth, Role-Based Access
- Pagination, Caching, Performance
- WebSocket/Chat Features

◆ Data Science & ML (with Python)

- Pandas, NumPy, Matplotlib, Seaborn
- Scikit-learn, Jupyter
- Basic ML Models (Regression, Classification)
- Real Data Projects

◆ Automation/DevOps

- Selenium for Web Automation
- Bash scripting + Python scripts
- Jenkins basics
- Infrastructure as Code (Terraform basic)

1️⃣□ Month 11: Capstone Project

✸ **Goals:**

- Build a full production-ready app that showcases your skills

Examples:

- Full-stack E-commerce App (React + Django + PostgreSQL)
- Task Manager with File Upload (Flask + S3 + EC2 + Docker)
- Resume Classifier using ML (Pandas + Scikit-learn + Flask API)

Include:

- Frontend
- Backend REST API
- Dockerized
- AWS Deployment
- Testing
- GitHub Actions

1️□ Month 12: Resume + Interview Prep + Portfolio + Job Hunt

🔑 Goals:

- Be job-ready

✅ Tasks:

- Build GitHub Profile & Pin 3 Best Projects
- Build a Developer Portfolio Website (React or static HTML)
- Resume & LinkedIn Optimization
- Practice 50+ Python + DSA Interview Questions
- Mock Interviews

Resources:

- LeetCode Top 75
- System Design Basics (for backend roles)
- Real Job Postings (study requirements)

□ Tools & Technologies Summary

Category	Tools & Frameworks
Core Python	Python 3.x, pip, venv, Jupyter
Backend	Flask, Django, Django REST, SQLAlchemy

Category	Tools & Frameworks
Frontend	HTML, CSS, JavaScript, React.js
Database	SQLite, PostgreSQL, MySQL, MongoDB
DevOps	Git, GitHub, Docker, CI/CD
Cloud	AWS EC2, S3, RDS, IAM
Testing	`pytest`, `unittest`, Postman, Swagger
Deployment	Docker Hub, Render, AWS, Heroku