

## Python Advanced (3 Months)

**Duration:** 3 Months (~120 Hours)

**Mode:** Live Online / Classroom

**Designation after completion:** Senior Python Developer / Application Developer

**Tools & Technologies:** Python 3.x, Asyncio, Multiprocessing, Design Patterns

**Certifications prepared:** PCPP – Professional Python Programmer

### Detailed Syllabus (12 Weeks)

#### Week 1

- Iterators, Generators revisited
- Assignment → Custom generator for logs

#### Week 2

- Functional Programming (map, filter, reduce)
- Closures
- Assignment → Text analyzer

#### Week 3

- Operator overloading
- Metaclasses
- Assignment → Matrix class

#### Week 4

- Multithreading basics
- Thread synchronization
- Assignment → Multithreaded file downloader
- Mock Interview 1

#### Week 5

- Multiprocessing basics
- Shared memory
- Assignment → Parallel image processor

#### Week 6

- Async/await basics
- Asyncio
- Assignment → Async web scraper

**Week 7**

- Network programming basics
- TCP vs UDP
- Assignment → Chat server

**Week 8**

- Packaging & distribution
- setup.py
- Assignment → Publish library
- Mock Interview 2

**Week 9**

- Advanced logging
- Profiling
- Assignment → Log analyzer

**Week 10**

- Memory management
- Optimization techniques
- Assignment → Optimize dataset processing

**Week 11**

- Design Patterns: Singleton, Factory, Observer
- Assignment → Observer pattern system

**Week 12**

- Mini Projects: Async Scraper, Chat Server
- Mock Interview 3

**Mini Projects**

Async Web Scraper  
Chat Server