



PYTHON TRAINING

Expert Python Programming Course

Become a Python expert. Develop advanced programming techniques for complex data structures and scalable solutions.

DURATION

48 hours

LEVEL

Intermediate

FORMAT

Instructor-Led

- Globally Recognized Certification

- Expert-Led Hands-On Training

- Flexible Scheduling

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COURSE OVERVIEW

The Expert Python Programming Course at Computer Pride is meticulously designed for individuals who have a foundational understanding of Python and are ready to delve into advanced concepts, paradigms, and real-world application development. This course goes beyond basic scripting, equipping you with the sophisticated skills required to architect, build, and maintain complex, high-performance Python applications across various domains, including web development, data analysis, and automation. You will master critical aspects of Python's ecosystem, learning to write clean, efficient, and scalable code.

Duration	48 hours
Level	Intermediate
Vendor	Python

COURSE CURRICULUM

01 Module 1: Advanced Python Language Features

- Decorators and Metaclasses for advanced customization
- Generators, Coroutines, and Asynchronous Programming (asyncio)
- Context Managers and `with` statements
- Type Hinting for robust codebases
- Advanced Class Design (slots, data classes, ABCs)

02 Module 2: Data Structures, Algorithms, and Performance

- Efficient Data Structures (collections module, custom structures)
- Algorithm Design and Analysis (time and space complexity)
- Profiling and Optimizing Python Code
- Memory Management and Garbage Collection in Python
- Interfacing with C/C++ using ctypes and Cython

03 Module 3: Professional Web Development with Python

- Deep Dive into Django/Flask Frameworks (advanced features, ORM optimization)
- Building and Securing RESTful APIs (DRF, authentication, authorization)
- Database Interactions and Advanced SQL with SQLAlchemy/Django ORM
- Deployment Strategies (WSGI, Gunicorn, Nginx, Docker)
- Testing Web Applications (unit, integration, end-to-end)

04 Module 4: Data Science & Scientific Computing

- Advanced NumPy for numerical operations and array manipulation
- Pandas for complex data analysis and manipulation
- Data Visualization with Matplotlib and Seaborn
- Introduction to Machine Learning with Scikit-learn (advanced models, pipelines)
- Working with large datasets and performance considerations

05 Module 5: Concurrency, Parallelism, and Best Practices

- Multithreading, Multiprocessing, and AsyncIO in depth
- Distributed Computing with Celery and Redis
- Testing Methodologies (Pytest, TDD, mocking)
- Logging, Debugging, and Error Handling Techniques

- Packaging and Distributing Python Libraries

06 Module 6: Project Work and Software Engineering Principles

- Applying Design Patterns (MVC, Singleton, Factory) in Python
- Code Quality and Maintainability (Linting, Black, Flake8)
- Version Control with Git and Collaborative Development Workflows
- CI/CD Pipelines for Python Projects
- Building a Comprehensive Capstone Project

CAREER PATHWAYS

Graduates of this program are prepared for the following roles:

- > **Senior Python Developer**
- > **Backend Web Developer (Django/Flask Specialist)**
- > **Data Engineer (Python-centric)**

FREQUENTLY ASKED QUESTIONS

Q: What types of complex systems or applications will I be proficient in developing upon completing this Expert Python Programming course?

Upon completion, you will be equipped to develop highly scalable web applications, robust data processing pipelines, intricate automation scripts, and foundational machine learning models. You'll gain proficiency in architecting multi-threaded or asynchronous applications, building secure RESTful APIs, and implementing sophisticated data analysis solutions, moving beyond basic scripting to enterprise-level software development.

Q: What are the specific prerequisites required to enroll in this Expert Python Programming Course, beyond just knowing Python basics?

To get the most out of this expert-level course, you should have a solid understanding of Python's core syntax, data types, functions, classes, and modules. Prior experience with object-oriented programming concepts is crucial. Familiarity with basic command-line operations, version control (like Git), and fundamental database concepts will also be highly beneficial, though not strictly mandatory as key concepts will be revisited.

Q: How does this course specifically prepare me for a Senior Python Developer or Data Engineer role, focusing on industry-relevant skills?

This course directly addresses the demands of senior roles by focusing on architecting scalable solutions, optimizing performance, and mastering advanced frameworks (e.g., Django, Pandas). You'll learn professional testing methodologies, deployment strategies (Docker, CI/CD), and best practices for writing maintainable, production-ready code. The emphasis on advanced algorithms, data structures, and concurrency patterns provides the problem-solving depth expected in these demanding positions.

ABOUT COMPUTER PRIDE



East Africa's Premier IT Training Center

With over 15 years of excellence, Computer Pride delivers globally recognized certification programs from leading technology vendors. Located on Kenyatta Avenue in Nairobi's CBD, our state-of-the-art facilities and expert instructors have empowered thousands of professionals across East Africa.

15+

Years of Excellence

10,000+

Professionals Trained

50+

Vendor Certifications

READY TO ENROL?

Take the next step in your technology career.

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