

KOENIG SOLUTIONS · COURSE OUTLINE

Advanced Python Programming (Comprehensive)

Learn to apply advanced Python techniques, from metaprogramming and multiprocessing to database, network and XML/JSON handling.

3 Days

24 HOURS

12

MODULES

84

TOPICS

COURSE OVERVIEW

The Advanced Python Programming course is designed for individuals looking to delve deeper into Python's powerful features and modules. This comprehensive course covers a wide range of topics from a Python refresher on basic concepts to Working with databases, Network programming, and Extending Python with C extensions. Through interactive lessons and hands-on exercises, learners will master Python's capabilities in analytics and data manipulation, making it an excellent python analytics course. Upon completion, participants will be equipped with the knowledge to tackle complex programming challenges and will be well-prepared to earn a python data analytics certification, showcasing their expertise in the field. By exploring advanced topics such as Metaprogramming, Multiprocessing, and Network programming, learners will enhance their skill set, preparing them for advanced Python applications in various industries.

Who Should Attend

The Advanced Python Programming course by Koenig Solutions is designed for experienced programmers looking to deepen their understanding of Python and its applications.

Software Developers seeking to improve Python coding efficiency

Python Programmers aiming to learn advanced features and best practices

Data Scientists requiring advanced Python skills for data manipulation and analysis

DevOps Engineers interested in automating tasks and using Python for system management

System Administrators who wish to script complex tasks in Python

Backend Developers needing to master Python for web application development

Full-stack Developers wanting to enhance their Python skills for versatility

Software Engineers preparing for roles requiring in-depth knowledge of Python

Technical Leads overseeing Python projects and seeking advanced knowledge

IT Professionals wanting to transition into roles that require advanced Python expertise

QA Engineers and Testers looking to automate testing with Python advanced features

Data Analysts needing to perform data wrangling and analysis with Python

Machine Learning Engineers who use Python for developing algorithms and models

LEARNING OBJECTIVES

- Apply Python data types, sequences and built-ins effectively
- Use the OS module to manage files, paths and directory trees
- Write Pythonic code using list comprehensions and lambda functions
- Organise code with modules, packages and naming conventions
- Build classes using inheritance, properties and static methods
- Implement decorators and attribute-based metaprogramming
- Test and debug programs with unittest and pylint
- Develop database, network and multiprocessing applications

12 Modules, 84 Topics

01

Python Refresher

TOPICS

Data types · Sequences · Mapping types · Program structure · Files and console I/O · Conditionals · Loops · Built-ins

02

OS Services

TOPICS

The OS module · Environment variables · Launching external commands · Walking directory trees · Paths, directories, and filenames · Working with file systems · Dates and times

03

Pythonic Programming

TOPICS

The Zen of Python · Common idioms · Lambda functions · List comprehensions · Generator expressions · String formatting

04

Modules and Packages

TOPICS

Initialization code · Namespaces · Executing modules as scripts · Documentation · Packages and name resolution · Naming conventions · Using imports

05

Classes

TOPICS

Defining classes · Instance methods and data · Properties · Initializers · Class and static methods/data · Inheritance

06

Metaprogramming

TOPICS

Implicit properties · `globals()` and `locals()` · Working with attributes · The `inspect` module · Decorators · Monkey patching

07

Programmer Tools

TOPICS

Analyzing programs · Using `pylint` · Testing code · Using `unittest` · Debugging · Profiling and benchmarking

08

Database Access

TOPICS

- The DB API
- Available Interfaces
- Connecting to a server
- Creating and executing a cursor
- Fetching data
- Parameterized statements
- Metadata
- Transaction control
- Other DBMS modules

09

Network Programming

TOPICS

Sockets · Clients · Servers · Application protocols · Forking servers · Binary data

10

Multiprogramming

TOPICS

- When to use threads?
- The Global Interpreter Lock
- The threading module
- Simple threading
- Sharing variables
- The queue module
- Debugging threaded programs
- Multiprocessing
- Other alternatives

11

XML and JSON

TOPICS

- Working with XML
- DOM and Sax
- Introducing ElementTree and xml
- Parsing XML
- Navigating the document
- Creating a new XML document
- JSON
- Parsing JSON into Python
- Converting Python into JSON

12

Extending Python

TOPICS

About non-Python modules · Overview of a C extension · Writing C by hand · Using SWIG · Loading modules with ctypes

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

FLEXIBLE DELIVERY

Learn the Way That Suits You

Classroom Training

Live Online Classes (ILO)

Fly-Me-A-Trainer (FMAT)

Flexi (Self-Paced)

1-on-1 Training

Ready to Get Started?

Talk to a learning advisor about schedules, group training and customised delivery.

Visit koenig-solutions.com

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