

Advanced Python Programming

Duration: 3 days

Skill Level: Intermediate and Beyond

Audience: Experienced Python programmers who wish to focus on Enterprise development.

Hands-On Format: This hands-on class is approximately 40/60 lab to lecture ratio, combining engaging lecture, demos, group activities and discussions with comprehensive machine-based practical programming labs and project work.

Module 1 -- Python refresher

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

Module 2 -- OS Services

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

Module 3 -- Pythonic Programming

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

Module 4 -- Modules and packages

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

Module 5 -- Classes

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

Module 6 -- Metaprogramming

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

Module 7 -- Programmer tools

- Analyzing programs
- Using pylint
- Testing code
- Using unittest
- Debugging
- Profiling and benchmarking

Module 8 -- Database access

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

Module 9 -- Network Programming

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

Module 10 -- Multiprogramming

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

Module 11 – XML and JSON

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

Module 12 -- Extending Python

About non-Python modules

Overview of a C extension

Writing C by hand

Using SWIG

Loading modules with ctypes