

Module: Python programming by hands-on

In this training, you will learn to program in Python language: syntax, functions, strings, files and modules, object-oriented programming, interact with an SQL database. With these skills, you can then do Python for: the web, Datascience or Big data.

Prerequisites : Know how to use a computer, programming concepts.



Ways to take this course: Online Instructor Led
Online self-paced
Video On Demand

Video conference tool: ZOOM

Duration: 28 H (4 days)

OUTLINE

Python - handling and syntax

- Introduction and history
- Uses of Python
- Install: Python, IDE, iPython
- PIP: install modules
- Create a virtual environment
- Run Python code
- Overview of common modules
- Types and operators
- Retrieve keyboard entries
- loops and IF structures
- Advanced types: list, tuple, set, dict
- Lab

How to create functions

- Creating functions
- Keyword and positional arguments
- *args and **kwargs notation
- Scope: locals(), globals()
- Docstring into function and module
- Unpacking on iterables
- Comprehension: list, set, dict
- Decorator, generator, lambda
- map(), filter(), reduce()
- Lab

Processing strings

- Concatenate, escape
- Using slices
- Methods of str class
- The string module
- Format strings
- Using the pprint module
- Regular Expressions
- Lab

How to manipulate files

- Process text files
- The different opening modes
- Read and write text file
- open(), read(), readline(), readlines()
- write(), close(), seek(), tell()
- Using the for..in loop
- Using the with loop
- Browse filesystem
- sys, os, pathlib modules

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Python modules

Create modules
Package, `__init__.py`
Import: `from`, `import`, `as`
Find modules: `PYTHONPATH`
.pyc files, disassembly
Navigate in modules
Structuring a project
Panorama of some modules
Global Settings
Documenting a module
Lab

Object-oriented programming

OOP concepts, classes
Create a class in Python
Constructor, destructor, `atexit()`
`self`, attributes, methods
Serialize with `__str__()`
Decorator `@property`. Operator overload
Implement simple inheritance
Implement multiple inheritance
Encapsulate, getters, setters, property
Static elements. Create an abstract class
Composition and aggregation
Example of polymorphism. Exception handling
Debugging with PDB
Lab

Using database

SQL and MySQL
DB API Python - databases
SQLite: create a table. Insert data
SQLite: read data. Install PyMySQL with pip
MySQL: create a database and a table
Connections with MySQL
Display, insert, update, delete
Stored Procedures. JSON and CSV files
Lab

Labs

Lab: Python syntax
Lab: Using OOP
Lab: The CAD design pattern
Lab: using the CSV module
Demo: Create a TKinter interface