

PCPP1 – Certified Professional in Python Programming 1 | Exam Syllabus

Exam block #1: Advanced Perspective of Classes and Object-Oriented Programming in Python (25%)

Objectives covered by the block (10 exam items)

- Classes, Instances, Attributes, Methods;
- Working with class and instance data;
- Copying object data using *shallow* and *deep* operations;
- Inheritance and Polymorphism;
- Different faces of Python methods: *static* and *class* methods;
- Abstract classes vs. method overloading;
- Composition vs. Inheritance – two ways to the same destination;
- Implementing Core Syntax;
- Subclassing built-ins;
- Attribute Encapsulation;
- Advanced techniques of creating and serving exceptions;
- Serialization of Python objects using the *pickle* module;
- Making Python object persistent using the *shelve* module;
- Metaprograming (function decorators, class decorators, metaclasses.)

Exam block #2: Python Enhancement Proposals (15%)

Objectives covered by the block (6 exam items)

- What is PEP?
- Coding conventions – not only style and naming;
- *PEP 20* – The Zen of Python: a collection of principles that influences the design of Python code;
- *PEP 8* – Style Guide for Python Code: coding conventions for code comprising the standard library in the main Python distribution;
- *PEP 257* – Docstring Conventions: what is *docstring* and some semantics as well as conventions associated with them;
- A tour of other important PEPs.

Exam block #3: GUI Programming (20%)**Objectives covered by the block** (8 exam items)

- What is GUI and where it comes from;
- Constructing a GUI – basic blocks and conventions;
- Event-driven programming;
- Currently used GUI environments and toolkits;
- *tkinter* Python interface to Tcl/Tk (tkinter's application life cycle; widgets, windows and events; sample applications)
- *pygame* – a simple way of developing multimedia applications.

Exam block #4: The Elements of Network Programming: Working with RESTful APIs (20%)**Objectives covered by the block** (8 exam items)

- the basic concepts of network programming, REST, network sockets, and client-server communication;
- How to use and create sockets in Python;
- how to establish and close the connection with a server;
- JSON and XML files, and how they can be used in network communication;
- HTTP methods, and how to say anything in HTTP;
- How to build a sample testing environment;
- CRUD;
- How to build a simple REST client;
- how to fetch and remove data from servers;
- how to add new data to servers and update the already-existing data.

Exam block #5: File Processing and Communicating with a Program's Environment (20%)**Objectives covered by the block** (8 exam items)

- Processing files:
 - *sqlite3* – interacting with SQLite databases;
 - *xml* – creating and processing XML files;
 - *csv* – CSV file reading and writing;
 - *logging* – basics logging facility for Python;
 - *configparser* – configuration file parser.

- Communicating with a program's environment:
 - *os* – interacting with the operating system;
 - *datetime* – manipulating with dates and time;
 - *io* – working with streams;
 - *time* – time access and conversions.