

# Programming basics in Python language



## Training recipients

The training is intended for people who would like to learn how to design and develop applications using Python language.



## Benefits

Students are acquainted with the advantages of programming in high-level Python language, particular emphasis is put on working out instinctive ways to solve issues encountered during work with that language. Theoretical and practical knowledge gained during training constitutes a solid basis for further development on the programmer's path.



## Training program

1. AN INTRODUCTION TO THE PYTHON LANGUAGE
  - what is Python?
  - a brief history of the language
  - philosophy of language (the Zen of Python)
  - first application
  - installation of the environment
  - working in interactive mode (interactive shell)
  - choice of integrated environment (IDE)
2. BASIC CONCEPTS
  - identifiers
  - data blocks
  - comments
  - variables

- assignment instructions
  - built-in primitive types and operators
  - control statements – conditional statements
  - control statements – loops
3. COMPLEX DATA TYPES
- character strings
  - formatting strings
  - operations on texts
  - tuples
  - ranges
  - lists
  - access to sequence elements
  - operations on sequences
  - sets
  - operations on sets
  - dictionaries
  - operations on dictionaries
4. FUNCTIONAL PROGRAMMING
- functions – introduction
  - defining functions
  - function parameters
  - functions with a variable number of parameters
  - scopes of variables and the LEGB rule
  - functions as arguments
  - lambda functions
  - dynamic typing vs. static typing
  - documenting the function code
5. CLASSES AND OBJECTS
- the OOP paradigm (Object-Oriented Programming)
  - classes and objects – basics
  - class attributes
  - methods
  - class instances
  - instance attributes
  - attribute access control
  - defining and using properties
  - data models
  - inheritance
  - attribute resolution order
  - magic methods
6. MODULES AND PACKAGES

- module objects
  - import statement
  - module attributes
  - from statement
  - main program
  - packages
  - package attributes
7. FILE OPERATIONS
- context manager
  - io package
  - opening files
  - closing files
  - attributes and methods of file objects
8. EXCEPTIONS
- exceptions – theory
  - exception handling
  - standard exception classes
  - custom exception classes
  - assertions
9. IMPORTANT BUILT-IN MODULES AND LIBRARIES
- built-in types
  - built-in functions
  - standard library
  - built-in modules
  - popular libraries



### Expected preparation of the participant

Recommended knowledge of programming language (structural and object) and knowledge of Linux/Unix/Windows environment.



### Duration

5 days / 35 hours

## Language

- Training: English