A.A. 2021/2022

PREREQUISITES

None

DEVELOPMENT OF THE COURSE

The course includes both practical and theoretical lessons.

Knowledge and Understanding

The objective of the course is to provide the basic concepts of programming (e.g., the concepts of algorithm, programming language and scripts). Then, we will study the Python programming language and its development through command line and Integrated Development Environment (IDE) such as PyCharm. In order to effectively learn Python, several exercises will be provided to address the common implementation issues.

Capacity to apply knowledge and understanding

At the end of the course, the student will be able to write a Python program to develop simple algorithms and applications. These skills are developed through guided exercises that require the methodologies described during the lectures. The student can apply the same methodologies explained during the course with other programming languages.

Transversal skills

The course provides the basic concepts of programming and the skills to solve simple application problems through a programming language such as Python.

PROGRAM

(1) Introduction to basic programming concepts.

(2) Variables, Expressions and Statements.

(3) Presentation of two development environments: command line and PyCharm. Management of installed libraries through pip.

(4) Functions

(5) If-then-else conditions and iterations

(6) Strings, lists, dictionaries, tuples, and sets

(7) Reading and Writing Files.

(8) Organization of Python scripts into modules and packages.

(8) Overview of object-oriented programming, classes, and objects in Python.

For each these points, appropriate exercises will be provided to facilitate the learning of the Python programming language.

Learning Evaluation Methods Examination

The learning evaluation method consists of a written and an oral test. In the written test, the student will have to solve some programming exercises in Python on course topics, while in the oral test, the student has to answer some questions on the exercises of the written test or any other topic in the course. The written test is preparatory to the oral test, so the student pass the written test to access the oral test. The oral test must be done in the same session as the written test. In case of a negative result for the oral test, the student must repeat the written test as well.

Learning Evaluation Criteria

The student must demonstrate, through written and oral tests, an understanding of basic programming concepts and the ability to develop a script in Python to solve simple application problems. The highest grade is given to students who demonstrate excellent familiarity in writing code and a good understanding of the concepts presented during the course.

Learning Measurement Criteria

The student learning will be measured with a maximum of 30 points, possibly cum laude.

Final Mark Allocation criteria

Each of the previous tests has a score between zero and thirty. The overall grade is given by the average of the grades obtained in the two tests, rounded up to the nearest whole number. Praise are reserved for students who, having done all the tests correctly and completely, have demonstrated an excellent understanding of Python and the course concepts.

RECOMMENDED READING

Slides provided by the professor.

- A. B. Downey. "Think Python". O'Reilly, 2015.
- B. Lubanovic. "Introducing Python: Modern Computing in Simple Packages". O'Reilly, 2019.