MaFiRM 2023/24

**Introduction to Python**

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14 hours

**Course objectives**

The module is an introduction to the Python programming language. At the end of this module, students should be familiar with Python language, being able to read and write non-trivial Python code, as well as to exploit Python for problem analysis using a vast series of external packages related to scientific computing and dataset processing. Students will be taught how to write their own code through concrete examples.

**Topics**

The module is an introduction to the Python programming language and deals with the following topics:

1. Introduction to Python language, variables and modules
2. Data structures
3. Loops and conditionals
4. Functions and scripts
5. Objects and Classes
6. Libraries for numerical analysis and plotting: Numpy, SciPy, and Matplotlib
7. Dataframes and Data analysis with the Pandas package

**Software tools**

* Python 3.8+
* Jupyter Notebook

**Textbook and course material**

Lectures slides and code examples will be distributed during the course. In addition, students may refer to:

* Allen Downey, Think Python, “How to Think Like a Computer Scientist” (available online for free at <https://greenteapress.com/thinkpython/thinkpython.pdf>)

**Exam**

Students will be evaluated (pass/fail) based on a final project that will be assigned at the end of the course.