

## Introduction to Python

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| Course title – Intitulé du cours               | Introduction to Python       |
| Level / Semester – Niveau / semestre           | M2 / second semester         |
| School – Composante                            | Ecole d'Economie de Toulouse |
| Teacher – Enseignant responsable               | Louis Olive                  |
| Other teacher(s) – Autre(s) enseignant(s)      |                              |
| Other teacher(s) – Autre(s) enseignant(s)      |                              |
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| Other teacher(s) – Autre(s) enseignant(s)      |                              |
| Lecture Hours – Volume Horaire CM              | 15                           |
| TA Hours – Volume horaire TD                   |                              |
| TP Hours – Volume horaire TP                   |                              |
| Course Language – Langue du cours              | English / Anglais            |
| TA and/or TP Language – Langue des TD et/ou TP | English / Anglais            |

### **Teaching staff contacts – Coordonnées de l'équipe pédagogique :**

Louis Olive: [louis.olive@gmail.com](mailto:louis.olive@gmail.com)

Preferred means of interaction: email

### **Course Objectives – Objectifs du cours :**

In this course, students learn the basics of programming, how to use algorithms and work with structured data. The entire course is given on a hands-on approach where the students code together with the instructor, with focus on data analysis and computational problems. During the course, students will enhance their understanding and skills by solving problems. By the end of the course, students should be able to:

- write simple Python programs using basic concepts of programming: variables, control flow, data structure, functions
- collect, process, analyze, visualize and draw conclusions from data using Python and its ecosystem
- identify a problem statement, gather information, plan a potential solution and report the results of a basic implementation
- implement programming best practices (code style and modularity, documentation) to deliver readable, maintainable, reusable code.

### **Prerequisites – Pré requis :**

Laptop or access to university computers. Basic understanding of math and logic.

Previous exposure to basic finance concepts and/or programming is a plus.

### **Practical information about the sessions – Modalités pratiques de gestion du cours :**

Personal computers allowed. The course attendance is compulsory.

### **Grading system – Modalités d'évaluation:**

Students will train by completing weekly ungraded programming exercises.

The exam consists in a research assignment with corresponding report and a live presentation in class with peer evaluation.

### **Bibliography/references – Bibliographie/références :**

Introduction to Python:

The Python tutorial (<https://docs.python.org/3/tutorial/>)

Beazley D.M. (2021) Python Distilled, Addison-Wesley.

(<https://dabeaz-course.github.io/practical-python/>)

Data wrangling and visualization:

McKinney W. (2022) Python for Data Analysis: Data Wrangling with pandas, NumPy & Jupyter, O'Reilly. (online version <https://wesmckinney.com/book/>)

Scientific computing:

Kong Q., Siau T. and Bayen A.M. (2020) Python Programming and Numerical Methods - A Guide for Engineers and Scientists, Academic Press.

(online version <https://pythonnumericalmethods.berkeley.edu>)

### **Session planning – Planification des séances :**

### **Distance learning – Enseignement à distance :**

Distance learning can be provided when necessary by implementing, for example: / En cas de nécessité, un enseignement à distance sera assuré en mobilisant, par exemple :

- Interactive virtual classrooms / Classe en ligne interactive
- MCQ tests and other online exercises and assignments / QCM et exercices en ligne
- Remote (online) tutorials (classes) / TP/TD à distance
- Chatrooms / Forums