[Introduction in Python for practical problems]

[3rd module, 2021]

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Course information

Course Website: TBD

Instructor's Office Hours: 19:00-21:00 Monday, Wednesday

Class Time: Saturdays, 12:00-13:30 (can be up to 2 hours)

Room Number: TBD

TAs: [Krainev Konstantin]

Course description

Nowadays, for an Economist it is vital to know the instruments that allow implementing different concepts and models, test them, analyze data, etc. One of the most popular and user-friendly instruments is Python. The course is designed to give students basics of Python to be able to use it during other courses at NES (there are enough of them) and use it for different purposes (e.g. Data Analysis, Models Development, etc). It is expected that during the course students will be able to write basic commands (write loops, functions, and classes), work with the data (load, filter, merge, etc), visualize data and dependencies, use it for other applied goals.

Course requirements, grading, and attendance policies

The course does not require initial knowledge of programming, although it is a plus. The course is optional; hence, the attendance is not mandatory. However, the benefits from this course highly depend on your motivation and attendance. There will be 4 home assignments each weighing 15% of total score. The project weighs the other 40%. There also can be small non-graded quizzes for tracking the progress.

Course contents

I. Python basics

a. Input/output, variable assignment and types, containers (tuples, lists, dictionaries, sets), manipulations with strings (regular expressions basics)
b. Conditions, loops, comprehensions
c. Functions, error-handling, classes

II. Working with data
   a. NumPy: vectors, matrices, related computations, data generation
   b. Pandas: reading data, slicing, conditions, filtering, aggregations, merging
   c. Working with dates

III. Visualization
   a. Making simple single plots
   b. Adding different elements
   c. Plots with several figures
   d. Multi-axes plots and some advanced plot types

IV. Applied topics
   a. Optimization (unconstrained, constrained)
   b. Basic statistics and econometrics
   c. Data scrapping

Description of course methodology

The course is designed to be practical. So, do not expect heavy theory. Asking questions during the classes is encouraged.

Course materials

Required textbooks and materials

There are no required textbooks. However, you are expected to read libraries documentation. Different cheat-sheets will be posted on my.nes. Other useful materials will be also posted on my.nes.

Academic integrity policy

Cheating, plagiarism, and any other violations of academic ethics at NES are not tolerated.