BSE
Barcelona School of Economics

| COURSE SYLLABUS | 21BD01 |

Introductory and intermediate computing for Data Science

| 0 ECTS | TERM 1 | BRUSH-UP |

Instructor

Maxim Fedotov

Prerequisites

The course includes practical exercises, so the students are required to have their laptops in class. It is recommended to have a Unix based Operating System, like Linux or Mac.

I encourage you to install IDEs of your choice for R and Python, and Jupyter. You will also have access to DataCamp – a platform for learning and practicing different programming languages / data skills.

You can find more information on the course website.

Overview and objectives

This course is for you to get comfortable with vital programming tools in Python and R before your intensive program starts. We will be going through lectures and practical exercises to cement the knowledge you obtain. There will be everyday assignments for you to practice and a final exam on both the Python and R parts. Please, utilize the DataCamp access and other resources to get more familiar with Python, Jupyter notebooks and R before the classes begin.

Course outline

Command Line (Unix-based OS)

- Introduction to Shell
- Installing packages, compiling executables, the PATH
- Reproducible environments

Python / R

- Basics: IDEs, editors, Jupyter notebooks, scripts, interactive sessions
- Basic Syntax
- Data Types and Structures
- Packages / Libraries
- Errors and Debugging
- Object Oriented Programming (Python), Functional Programming
- Specific Packages / Libraries for data science

General

- Programming Principles: abstraction, loose coupling and LoD
- Testing
- Object Oriented and Functional programming
- Version control: Git

Evaluation

There will be two separate tests: on Python and R. Effectively, they will contain practical exercises on the different topics considered during the course. The tests must be done individually and submitted via the classroom.

Materials

Use DataCamp to practice. Other resources will be mentioned in class.