

# **Introduction to Programming And Data Science**

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## **Syllabus:**

Introduction to programming methods and data analysis with R and/or Python. Focus will be on R environment but fundamentals will be also available with Python. Variables, constants and data types. Control flow. Basic algorithms. File Input/Output. User defined functions. Data manipulation. Random numbers. Installation and management of packages and libraries. Working with online databases like Eurostat, OECD, WorldBank, YahooFinance, etc. Plotting with ggplot2 and matplotlib. The course provides some Latex instructions and tutorials for writing a scientific report. Participants in this course need to write a final paper with any topic relevant to economics (or related) research and should provide code to solve a particular problem of interest.

## **Teaching:**

Classroom and laboratory combined time. Teaching is mostly in English as it is taught in a mixed class (Greeks and foreign students). Any material found in Greek can be replaced easily from library or internet sources in English. Greek student are requested to provide code documentation in English as well.

## **Grading:**

A mid-term exam for 50% and a final assignment 50%. All writings are required in Latex system. Participation in laboratory/classroom experiments and discussion is a plus (up to 15%).

## **Basic Book:**

R for Data Science (2e),  
<https://r4ds.hadley.nz/>

## **Course type:**

Elective, Advanced level, 6 ECTS

## **Notice:**

There is no requirement for previous programming experience. Compilers and software are cost-free for students (open source). All lectures/assignments/notes are posted online.