

Course outline for Financial Econometrics

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Google Classroom code: `sgjucxa`

Google Meet code: `https://meet.google.com/cnw-wnha-rap`

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1 Summary

The course of Financial Econometrics has the objective to develop the financial time series econometrics tools for the students at the master of International Financial Risk Management. The course focuses on the development of necessary techniques to apply risk management tools on financial time series. The course objectives are twofold: on the one hand we develop econometric tools for risk management and research in financial markets and on the other hand we set forth the use of an econometric software (mainly Python, R, Matlab and Eviews). The topics covered by this course require basic knowledge from previous courses of mathematics, statistics, econometrics and programming, at the undergraduate level.

1.1 Applications

The course relies heavily on hands-on immediate application of the econometric concepts. We therefore allocate a lot of time to programming (coding) and work on specific activities that develop such skills. We will develop programming skills in class and we will develop examples in the courses. Electronic resources for development of Python, R, Matlab skills will be provided on the course website.

1.2 Textbooks

- A very good presentation (detailed and with accompanying codes) on Machine Learning and DATA SCIENCE: Aurelien Geron - Hands-On Machine Learning with Scikit-Learn, Keras and TensorFlow (2019)
- A more practical approach to econometrics for financial risk management is delivered in "Elements of Financial Risk Management", P. Christoffersen, (Academic Press), 2012, second edition.
- Box-Jenkins ARIMA methodology, covered by "Basic Econometrics" by D. Gujarati (McGraw-Hill).
- A rather advanced econometric presentation is provided in "Analysis of Financial Time Series", R. Tsay (John Wiley & Sons), 2005, second edition.
- Further advanced materials will be followed in the lectures

2 Electronic Ressources and the WebPage

All the above mentioned topics will be presented in class. The electronic resources (codes, Excel files, slides, textbook excerpts) will be made available on the course website.

3 Assessment

The students will group in teams of *maximum 3 persons* to solve the assignments.

The **deadlines** and the **requirements** for these assignments will be announced on the course website.

Solutions to assignments will be packed in archive files. Students will submit two elements:

- a report in Word or pdf and
- one or more calculation files (Excel, Eviews, Python or Matlab).

They will be packed inside an archive file that will have the *family name* of the 3 contributors. Specific requirements will be provided in each assignment.

The archive that contains the answers to assignments will be uploaded to google classroom (assignments).

Please do not send the answers to the professor's email address!!!

4 Grading

- The assignments will cover **60%** of the final grade.
- A project will cover **20%** of the final grade.
- An exam (computer-based) will cover **20%** of the final grade.