

## International Economics

Academic year 2024-2025

## Econometrics II

### EI062 - Spring - 6 ECTS

Monday 10h15 - 12h00

## Course Description

This is the second of two compulsory econometrics courses for first-year master students. It starts with a brief treatment of causal inference, introducing the potential outcomes framework and the concepts of ideal and natural experiments. Thereby, it compares non-parametric causal inference approaches and parametric models like the linear regression, in particular with regard to their respective use of covariates and instrumental variables. Next, the course treats inference with time series data. It covers time series regressions, univariate time series models as well as reduced-form and structural vector autoregressions. The final part of the course is devoted to the basics of panel data analysis (incidental parameters problem, pooled OLS, fixed effects, random effects). Assessment is based on two exams and bi-weekly problem sets. By analyzing foundational models and concepts in-depth and emphasizing the practical (numerical) implementation of inference procedures, the course allows students to easily apply their knowledge to non-standard settings, tailored to their application of interest.

## > PROFESSOR

[Marko Mlikota](#)

[Office hours](#)

## > ASSISTANT

Francesco Casalena

[Office hours](#)

## IMPORTANT

**Regular attendance** is compulsory, and any absence must be promptly communicated to the teacher. In the event of missing more than two sessions, students are expected to provide well-documented justifications for unforeseeable circumstances (e.g. illness, accident, death of a relative), directly to the Direction of Studies. Failure to justify absences beyond two sessions will result in the assignment of code N.

Students are also reminded of the following legal rules:

The teacher owns the **copyright** on the material they created for this course. As such, any reproduction or distribution of this document, in whole or in part, as well as of any other material created by the teacher for the course, is prohibited unless permission is granted by the author.

Recording (as video or audio) a course without the consent of the teacher and other participants is strictly forbidden.

## Syllabus

## Pre-requisites

Knowledge of statistics, probability and matrix algebra is required. Students must have taken and passed the *Maths Bootcamp* for incoming MIE students. It is assumed that students have taken at least one undergraduate-level course in econometrics and one in probability and statistics. Also, they must have taken the Master-level course “Econometrics I” (EI035).

## Textbooks

The course will not follow one specific textbook. Lecture notes will be provided as well as suggested further reading (textbooks, papers).

## Grading

The final grade will be based on three equally weighted components: i) a mid-term exam, ii) a final exam, iii) (bi-weekly) problem sets.

## Tutorials

The lectures will mainly focus on econometric theory and discuss the applicability of methods, with occasional illustrations. Weekly review sessions will cover the solution of (theoretical and applied) problem set exercises and illustrate concepts discussed in class.

Problem set solutions are based on the software R, but students are welcome to use any software of their choice. While Stata may be a good choice for applying off-the-shelf methods, it is of limited use for methods specifically tailored to one's application as well as for simulation studies. More flexible software like R, Matlab, Python or Julia is more appropriate for most of the exercises in this course. Basics of R are discussed in the *Maths Bootcamp* for incoming MIE students. Also, a document with useful R-commands is available at <https://markomlikota.github.io/teaching/>, and the level of R required to solve the exercises will rise only slowly in the first weeks.