MRes/PhD Econometrics 1 (BS1221)
Imperial College London
Fall 2019

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Notes are available on Hub
Course Unit: Semester 1 (Core)

1. Overview

The purpose of this course is to provide a foundation in econometric theory and applications. The course starts from an introduction to econometrics, which may be familiar to you, and gradually builds up to advanced estimation and inference methods. Students will learn how to conduct and critique empirical studies in finance, economics and related fields.

2. Pre-requisites

Students are assumed to have an understanding of multivariate calculus, probability theory, linear algebra, and mathematical statistics. A prior course in undergraduate econometrics would be helpful.

3. Semester Plan

Lectures cover the following topics:

- Linear estimation: OLS and variations (using matrix algebra), t-test and F-test, Generalized Least Squares and Instrumental Variables
- Nonlinear estimation: Maximum Likelihood Estimation (MLE), Generalized Method of Moments (GMM), extremum estimators and related hypothesis testing (likelihood ratio, Lagrange multiplier, Wald, etc. tests)

4. Exercise Classes

In weeks 1 and 2 (Wednesdays 25 Sep. and 2 Oct.), we begin with two sessions on: (i) linear algebra and its applications to econometrics. In weeks 3–8 (Thursdays 9–10), we review exercises on topics covered in lectures.

5. Assessments

Problem Sets (20%)

- PS1 (10%): After lecture 4
- PS2 (10%): After lecture 6

Solution to each problem set is provided in the next exercise class. Submissions must be made via the Hub before the deadline. If any possibility of late submission arises please let me or the programme administrator know.

Mid-term (30%)

- One mid-term on 31 October (TBC)
- Closed-book (statistical tabulations of any required distributions will be provided at the session)

Final Exam (50%)

- In December, Material covered in all weeks
- Closed-book (statistical tabulations of any required distributions will be provided at the session)

6. Textbook

Probability, Statistics and Econometrics (2017), Oliver Linton