Graduate econometrics I

Lecturer
Germain VAN BEVER (Coordinator)

Course mnemonic
ECON-S428

Language(s) of instruction
English

Course period
First term

Campuses
Solbosch and Outside campus ULB

Course content

1. Finite sample theory of linear regression models.

2. Basic elements of asymptotic theory (notions of convergence and basic properties; laws of large numbers; central limit theorems)

3. Large sample properties of estimators and tests in linear regression models.

4. Asymptotics of M-estimators and in particular generalized method of moment estimators (asymptotic theory, examples, and related hypothesis tests).

5. Basic elements of time series analysis (basic terminology, stationarity, linear time series models).

Objectives (and/or specific learning outcomes)

After successfully taking this course, students understand the theoretical framework, both finite sample as well as asymptotic, underlying linear regression models. Furthermore, they have a thorough understanding of generalized method of moment estimators and the corresponding hypothesis tests, and understand the basic elements of time series analysis. Students have applied the methods discussed in class themselves, understand how to implement these methods computationally, and can interpret the results obtained.

Pre-requisits and co-requisits

Required knowledge and skills

A good understanding of elementary concepts in probability, statistics, linear algebra and calculus.

Teaching method and learning activities

This course consists of weekly lectures, in which the theoretical concepts are discussed and illustrated using practical examples; and weekly exercise sessions, during which we shall discuss theoretical as well as practical and computational problems in the form of weekly assignments to illustrate and supplement the topics discussed in the lectures. For the exercise sessions, students prepare solutions to weekly assignments, which are then presented in class. Organizational details will be discussed in the first lecture.

Contribution to the teaching profile

This course provides a thorough overview of econometric methods. We start with a discussion of properties of estimators, tests and confidence intervals in linear regression models. Then, after introducing some basic elements of asymptotic theory, we derive large sample properties of procedures in linear regression models. We proceed to introduce the class of generalized method of moment estimators, and of related tests. In the last part of the course, we discuss fundamental elements of time series analysis, i.e., stationarity and autoregressive moving average models. We discuss computational and practical issues during the lectures, as well as in the problem sessions.

References, bibliography and recommended reading

Hayashi, S. (2000). *Econometrics*. University Press Group Ltd.

Brockwell, P. and Davis, R.A. (1987). *Time Series: Theory and Methods*. Springer.

Newey, W. and McFadden, D. (1994). Large Sample Estimation and Hypothesis Testing. In: *Handbook of Econometrics*, Vol 4, Chapter 36.

Course notes

Podcast and Université virtuelle

Other information

Place(s) of teaching

Outside campus ULB and Solbosch

Contact(s)

Germain Van Bever
E-mail: germain.vanbever(at)ulb.be (when available)
Please use the UV message board.

Evaluation method(s)

Other

Evaluation method(s) (additional information)

Final grade is based on three components: (i) the final exam, (ii) performance in exercise classes, (iii) the project grade. classes.

Determination of the mark (including the weighting of partial marks)

For the 10 credits version of the course: The evaluation of the performance of the exercise classes, the project and the final exams each carry 1/3 of the weight.

For the 5 credits version of the course: The evaluation of the performance of the exercise classes carries 40% of the weight. The final exam carries 60%.

The evaluation of the exercise classes is based on the percentage of problems a student has successfully solved during the whole term.

The written exam will be in January 2021, and there will be a written resit exam in August/September 2021.

Main language(s) of evaluation

English

Programmes

Programmes proposing this course at the Solvay Brussels School of Economics and Management

MA-ECOE | Master in Economics : Econometrics | finalité Research in Economics/unit 1 and finalité Research in Economics and statistics/ unit 1, MA-ECON | Master in Economics : General | finalité Economic Governance and Public Policy in Europe/unit 1 and MS-BGDA | Specialized Master in data science, Big data | unit U

Programmes proposing this course at the faculty of Sciences

MA-STAT | Master in Statistics : General | finalité Research General/ unit 1 and MS-BGDA | Specialized Master in data science, Big data | unit U

Programmes proposing this course at the Brussels School of Engineering

MS-BGDA | Specialized Master in data science, Big data | unit U