Économétrie Appliquée

Level: *Bachlor – third year – L3*
Cursus : *Economics*
Semester : S2
Teaching hours : 18 hours of lectures (CM) and 18 hours of tutorials
Teacher : Siwar Khelifa
Contact : khelifa@gate.cnrs.fr

Objectives of the course :

The objective of this course is to broaden the field of econometric expertise of students relating to the linear model. At first, we will make reminders about the linear model and an introduction to R, a free statistical software. Secondly, we will present the main difficulties related to the estimation of a linear econometric model. We will see in detail the problems posed by the violation of the hypotheses of the linear model estimated by the ordinary least squares method. We will deal with the hypotheses of homoscedasticity, full rank of the matrix of regressors and independence of the residuals. We will discuss the issues of selection of concurrent models and constraints on the parameters (constrained least squares).

Plan of the course :

6 chapters with 6 tutorials:
      CH1: Linear regression model & OLS estimator
      CH2: A quick introduction to R
      CH3: Heteroscedasticity
      CH4: Multicollinearity
      CH5: Model selection
      CH6: Correlation of residues

Skills developed :

- Be able to identify issues that bias estimates in a linear regression model
- Be able to determine the causes of these problems
- Be able to determine the consequences of these problems.
- Be able to determine how to correct these problems
- Use R for linear regression model estimation and correction of potential problems.

Grading system :
A single written test and a project to submit

Prerequisites :
This course requires a good acquisition of probability results (expectation, variance, distribution of a random variable, . . .) as well as a good knowledge of simple and multiple regression techniques

References :

- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. MIT press.
- Greene W.H. (2011). Économétrie. 7e édition, Pearson Education.
- Lire l'économétrie, Behagel L. (2006)
- Économétrie, R. Bourbonnais, Dunod, 2002