

Intermediate Econometrics

Course title - Intitulé du cours	Intermediate Econometrics
Level / Semester - Niveau /semestre	M1 / Semestre 1
School - Composante	TSE
Teacher - Enseignant responsable	CRISTINA GUALDANI – PASCAL LAVERGNE
Other teacher(s) - Autre(s) enseignant(s)	To Be Announced
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	10,5
TP Hours - Volume horaire TP	10,5
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	Anglais

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

Lecturers: Cristina Gualdani, MF 408 cristina.gualdani@tse-fr.eu, office hours by appointment

Pascal Lavergne, MF 210, pascal.lavergne@ut-capitole.fr, office hours by appointment

Teaching Assistants: TBA

Course's Objectives - Objectifs du cours :

This is an intermediate econometrics course, which builds on the introductory econometrics course (L3) and is a prerequisite for applied econometrics and program evaluation courses (M1), as well as the econometrics courses in later years. We will study the main econometric methods used in applied economics. The methods are further studied and illustrated with economic applications in tutorials and hands-on applied exercises in the lab with R. The course reviews Ordinary (OLS) and Generalized Least Squares (GLS), and studies Instrumental Variables (IV) Methods, Nonlinear Least Squares (NLS), Maximum Likelihood Estimation (MLE) and Generalized Method of Moments (GMM), focusing on their proper use and asymptotic properties. At the end of the course, students should be able to use the suitable methods depending on the context, should know their main properties and be able to establish them, and should know how to interpret the results in practice.

Prerequisites - Pré requis :

Prerequisites are Inferential Statistics (L2) and Introductory Econometrics (L3).

Here are the main concepts students should be familiar with:

Probability: random variables and vectors, probability distribution (joint, marginal, conditional) and density, quantiles, moments (expectation, variance, standard deviation,...), conditional expectation and variance, normal vectors and related distributions (Chi-square, Student, Fisher). Those concepts are presented in Greene (2011), Appendix B.

Inferential Statistics: random sampling, empirical moments (mean, variance,...) and quantiles, modes of Convergence (weak, quadratic mean, in law), estimator, unbiasedness, efficiency, law of large numbers, central limit theorem, confidence interval, hypothesis testing. Those concepts are presented in Greene (2011), Appendix C.

Econometrics: Simple and multiple linear regressions, least squares (estimation, finite sample properties), confidence intervals, tests, interpretation of parameter estimates (continuous and discrete explanatory variables, models with the dependent and/or explanatory variables in log), heteroskedasticity. Those concepts are covered in Stock, Watson (2014), chapters 4 to 7 or Wooldridge (2015), chapters 1 to 8.

Practical information about the sessions - Modalités pratiques de gestion du cours :

Attendance to lectures and tutorial/lab sessions is essential and participation during class is strongly encouraged. Lecture notes and problem sets will be available on the course webpage on Moodle. Students have to read the lecture notes and work on the problem sets before attending the corresponding lecture/tutorial/lab session. Students are expected to check the course webpage regularly for updates and information. Usage of laptops and tablets during classes is allowed, provided they are used for the class only.

Grading system - Modalités d'évaluation :

Grading policy:- Homeworks: 20%- Midterm: 30%- Final exam: 50%.

The homeworks are done in pairs. We will not tolerate exact copies or late submissions.

Bibliography/references - Bibliographie/références :

Detailed lecture notes will be given all along the class. The following references may be useful to complement the content of the lecture notes:

- Greene, W., 2011, "Econometric Analysis", 7th edition, Pearson Education.
- Ruud, P., 2000, "An Introduction to Classical Econometric Theory", Oxford University Press.
- Stock, J., Watson, M., 2014, "Introduction to Econometrics", 3rd edition, Pearson Education.
- Wooldridge, J., 2015, "Introductory Econometrics: A Modern Approach", 6th edition, Cengage Learning Custom Publishing.

Planning: TBA