SUBJECT TEACHING GUIDE

856 - Econometrics

Master's Degree in Economics: Instruments of Economic Analysis

Academic year 2023-2024

1. IDENTIFYING DATA				
Degree	Master's Degree in Economics: Instruments of Economic Analysis		Type and Year	Compulsory. Year 1
Faculty	Faculty of Economics and Business Studies			
Discipline	Obligatory Subjects Module			
Course unit title and code	856 - Econometrics			
Number of ECTS credits allocated	4	Term	Semester based (1)	
Web				
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. ECONOMIA
Name of lecturer	ALEXANDRA PILAR SOBERON VELEZ
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Other lecturers	JUAN MANUEL RODRIGUEZ POO

3.1 LEARNING OUTCOMES
- Carry out empirical work, selecting the appropriate statistical-econometric methods according to the nature of the data and the problem to be analyzed and using specialized computer programs.

4. OBJECTIVES
That the student of this subject learn to model a specific problem from a theoretical point of view, and then, based on the model proposed by economic theory, incorporate the data and generate predictions and explanations of the variables of interest.
Provide students of this subject with the necessary tools to acquire the specific competences of the curricular lines that the students of the master decide to undertake.

6. COURSE ORGANIZATION	
CONTENTS	
1	Topic 1. Statistical Review 1.1 Probability and distribution. 1.2 Foundations of mathematical statistics. 1.3 Matrix algebra. Topic 2. General Linear Regression Model 2.1. Specification. 2.2. OLS estimation. 2.3. Properties in finite samples. 2.4. Asymptotic properties. 2.5. Inference 2.6. Prediction
2	Topic 3. General Framework: Nonlinear Models 3.1. Linear regression model with heterocedastic perturbations. Aitken estimator. 3.2. Maximum-plausible estimator. Cramer-Rao bound. 3.3. Instrumental Variables Estimator. 3.4. Generalized Method of Moments. 3.5. General estimation method. Properties. 3.6. Wald's Tests, Likelihood Ratio, and Lagrange Multiplier. 3.7. Numerical optimization.
3	Topic 4. Regression Model with Time Series. 4.1. Specification. Examples of econometric models with time series. 4.2. OLS estimation. Properties of the estimators in finite samples. 4.3. Asymptotic properties of the OLS estimator. 4.4. Stationarity and weak dependency. Regression with non-stationary series. 4.5. Properties of OLS estimators with autocorrelated perturbations. 4.6. Autocorrelation detection. 4.7. Robust inference with OLS in the presence of autocorrelation. 4.8. Estimation of the GLRM in the presence of autocorrelation.
4	Topic 5. Panel data 5.1. Modeling. 5.2. Fixed and random effects. 5.3. Basic tests.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Description Final written exam that will be common in the three universities and will be held the same day at the same time.	Written exam	Yes	Yes	50,00
The continuous evaluation will be three tasks throughout the course, one for each topic (considering topic 1 and 2 together) and the commentary of a scientific paper. The final exam will be the same in the three universities at the same day and time.	Work	Yes	Yes	50,00
TOTAL				100,00

Observations

In the event that it is not possible to carry out the evaluation in person due to the evolution of the pandemic, the evaluation will be exactly the same if it is carried out telematically through the available resources.

Observations for part-time students

Part-time students will take the same final exam as full-time students. this exam corresponds 100% of the note. In case of obtaining a grade lower than 5 points out of 10, the students will carry out the same extraordinary call exam that full-time students.
In the event that it is not possible to carry out the evaluation in person due to the evolution of the pandemic, the evaluation will be exactly the same if it is carried out telematically through the available resources.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Greene, W.H. (2003). Econometric Analysis. Ed. Prentice Hall, 5ª edición.

Wooldridge, J.M. (2019). Introductory econometrics. A modern approach (7th ed.). Cengage Learning.