Econometrics

Academic Year: (2021 / 2022) **Review date: 09-06-2021**

Department assigned to the subject: Economics Department

Coordinating teacher: DELGADO GONZALEZ, MIGUEL ANGEL

Type: Compulsory ECTS Credits : 6.0

Year : 2 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Mathematics for Economics I
Mathematics for Economics II
Statistics I
Statistics II
Principles of Economics
Microeconomics

OBJECTIVES

This course offers an introduction to data analysis in Social Science with the assistance of the linear in variables model. The emphasis is on the interpretation of the model and the application of statistical inference techniques to solve relevant practical problems. The course discusses in detail how to make inferences under non-standard situations, relevant in Social Sciences, due to the nature of the variables in the model (qualitative, transformed to allow nonlinear relations or non-observable,) or to the nature of data. The rigorous formal justification of the applied statistical inference techniques is out of the scope of this course. The background in Probability, Statistics, Algebra and Calculus offered in Mathematics I & II and Statistics I & II is more than enough for this course.

The course has two objectives. On the one hand, understand the interpretation and all the methodological aspects of estimating causal relationships between variables in different contexts. This includes the interpretation of causal relationships in linear and non-linear models in variables, binary regression models, and models with endogenous explanatory variables. It also includes learning the fundamentals of inferences based on least squares, maximum likelihood, and instrumental variables. On the other hand, the student will be able to make inferences in the studied models using real data with the help of the GRETL program. The student will be examined for each and every one of these aspects.
A very important aspect of the course consists of using Econometrics software packages. The most used in class is GRETL, but we also use E-Views. It is essential that the student has a personal computer with at least GRETL installed. The midterms exams, and possibly the final, require using GRETL. Students must attend all classes, both magistral and reduced, with their personal computers.

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At the end of the course, the student will acquire a good working knowledge on the interpretation of the linear regression model, discriminating between alternative specifications by means of statistical inference, and using GRETL for estimation and hypothesis testing.

DESCRIPTION OF CONTENTS: PROGRAMME

This course offers an introduction to data analysis in Social Science with the assistance of the multiple regression model. The emphasis is on the interpretation of the model and the application of statistical inference techniques with the objective of solving relevant practical problems. The course discusses in detail how to make inferences under non-standard situations, relevant in Social Sciences, due to the nature of the variables in the model (qualitative, transformed to allow nonlinear relations or non-observable) or to the nature of data.

The course follow Chapters 4 to 8 of Stock & Watson (2012). Syllabus:

1. The nature of econometrics and economic data (SW. Ch. 1, 2 & 3)
2. The simple regression model (SW. Ch. 4,5).
3. Multiple regression analysis: estimation (SW. Ch. 6)
4. Multiple regression analysis: inference (SW. Ch. 7)
5. Nonlinear regression using linerar multiple regression (SW. Ch. 8).
6. Discrete choice (SW. Cp. 11).
7. Instrumental variables estimation and two stages least squares (SW. Cp. 12).

LEARNING ACTIVITIES AND METHODOLOGY

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Students must come to class with a laptop on which GRETL must be installed.

GRETL free software is the fundamental learning tool. The different concepts are discussed in the context of case studies in Social Sciences using real data.

Students must attend class with a laptop on which GRETL must be installed.

The midterm exam will be done with the laptop and will require modelling of relevant causal relationships in the social sciences, as well as making statistical inferences about them, using real databases with the help of GRETL.

ASSESSMENT SYSTEM

The continuous evaluation consists of:

A midterm exam

Comments:

1.- There is not a minimum mark in order to take into account the continuous assessment.
2.- The continuous assessments is taken into account in the final grade according to the University regulations.
3.- The final grade can be routed up attending to the participation in class, according to the instructors criteria.

% end-of-term-examination:	60
% of continuous assessment (assigments, laboratory, practicals…):	40

BASIC BIBLIOGRAPHY

- Goldberger, A.S. Introductory Econometrics, Harvard University Press, 1998
- Greene, W.H. Econometric analysis , Prentice Hall, 2008
- Gujarati, D.N. Basic Econometrics, McGraw-Hill, 2009
- Jonhston, J. Econometric Methods, The McGraw-Hill Companies, 1997
- Stock, J.H. & M.W. Watson Introduction to Econometrics, Addison Wesley, 2012
- Wooldridge, J.M. Introductory Econometrics. A Modern Approach, South-Western College Publishing, 2009

ADDITIONAL BIBLIOGRAPHY

- Hayashi, F. Econometrics, Princeton University Press, 2000
- Wooldridge, J.M. Econometric analysis of cross section and panel data , The MIT Press, 2009