

DATA ANALYSIS FOR ECONOMICS

IE University

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Degree course: THIRD

Semester: 1º

Category: COMPULSORY

Number of credits: 5.0

Language: English

PREREQUISITES

MATHS I & II, STATISTICS

SUBJECT DESCRIPTION

Data Analysis for Economics is the application of statistics tools and mathematical methods to describe, analyse and predict economic and business phenomenon. The main concern of this course is related with the art of using economic theory and statistical techniques to analyse real world data sets.

This is an introductory course. Students will learn the basic techniques to analyse, model and interpret business and economic data. On one hand, the course will provide a broad training in basic econometric methods and tools, mostly related to linear regression analysis. On the other hand, students will learn practical applications to real economic and business problems using those econometric approaches.

Particular emphasis is given to the careful interpretation of numerical results and to understanding the implications of those results for economic policy and business decision making

OBJECTIVES AND SKILLS

The course aims to provide students with a rigorous reasoning using the econometric approach when analysing problems and making decisions. Students will also learn practical applications mostly related within an economic and business context.

Objectives to be attained along the course:

- Apply econometric techniques for making decisions with quantitative and categorical data within an economic and business context.
- Understand the regression model (simple and multiple), its scope and limitations.
- Interpret and evaluate relationships between variables using econometrics.
- Understand and drive the properties of OLS.
- Interpret, evaluate and apply inferential methods to linear regression.
- Understand the use and implications of data scaling, functional form and dummy variables in regression modelling.
- Identify the presence of estimation problems.
- Acquire fluency in the use of GRET software in order to apply econometric techniques using real world data.

Skills to be acquired during the course:

- Fostering a logic and rigorous reasoning when facing quantitative analysis.
- The analysis and critical assesment of numerical results.
- The ability to formulate, express and solve a problem or question with a model.
- The ability to identify the relevant elements when facing a business decision.

METHODOLOGY

There will be a distribution 50/50 between theoretical and practical sessions.

Lectures:

Theoretical sessions will be concerned with the study of the different econometric tools. The appropriate use of mathematical and statistics concepts and methods is very relevant in this part of the course. Along the different lectures, examples and/or dicussions about real applications will be provided in order to improve the understanding of the different theoretical concepts.

Classes:

Practical sessions will consist on discussions about practical worksheets so called Problem Sets. Students are required to work by themselves on these Problem Sets that will be provided in advance to the due date.

Computer Classes:

In addition, practical sessions are complemented with computer classes along the course. Students will learn how to use an statistical software in order to apply econometric techniques with real data sets. Part of the evaluation will consist on a computer exam with real data using the software.

The program of the course is divided into five parts (units) that are detailed in the next section (PROGRAM):

- UNIT 1: INTRODUCTION
- UNIT 2: LINEAR REGRESSION MODEL (LRM)
- UNIT 3: HYPOTHESIS TESTING
- UNIT 4: DUMMY VARIABLES
- UNIT 5: ESTIMATION PROBLEMS

The sessions within each of the units are a combination of theoretical and practical classes (lectures, problem sets and computer classes).

In the below table you can find the teaching methodology by time dedication.

Teaching methodology	Weighting	Estimated time a student should dedicate to prepare for and participate in
Lectures	20.0 %	25 hours

Discussions	0.0 %	0 hours
Exercises	20.0 %	25 hours
Group work	20.0 %	25 hours
Other individual studying	40.0 %	50 hours
TOTAL	100.0 %	125 hours

EVALUATION CRITERIA

Ordinary evaluation

Your final grade in the course will be based on a combination of different items that are described in the following table:

Criteria	Percentage	Comments
Class Participation	10 %	Participation
Intermediate Tests	20 %	Mid-term exam
Workgroups	20 %	Computer exam
Final Exam	40 %	Final Exam
Individual Work	10 %	Non-class Learning

CLASS PARTICIPATION (10%)

Participation in class will be evaluated positively if students: (1) attain a threshold quantity of contributions that is sufficient for making a reliable assessment of comment quality. Additionally, (2) participation will be evaluated in quality terms. A high quality comment reveals depth of insight, rigorous use of case evidence, consistency of argument, and realism. A high quality presentation of ideas must consider the relevance and timing of comments, and the flow and content of the ensuing class discussion. It demands comments that are concise and clear, and that are conveyed with a spirit of involvement in the discussion at hand.

INDIVIDUAL WORK (10%)

Some exercises both from problem set classes and computer classes will be delivered and corrected for the individual work evaluation. (non-class learning)

MID-TERM EXAM (20%)

The mid-term exam will cover Units 1 and 2 of the content of the course. More details about this exam will be provided in advance in class.

COMPUTER EXAM (20%)

This exam mainly consists in solving and discussing some questions about a case study in econometrics with real data using the statistical software. This exam is in groups (no more than 3 students per group). More details about this exam will be provided in advance in class.

FINAL EXAM (40%)

The final exam will take place in session 30 and will cover all the content of the course. More details about this exam will be provided in advance in class.

IMPORTANT: In order to pass the course, you need a minimum grade of 3.5 in the final exam. If your grade in the final exam do not reach the threshold value of 3.5, you will fail the course, even in the case in which your weighted average of the course exceeds 5.

Given that the dates of exams are provided in advance, no excepcions will be made. If you do not attend the exams (for whatever reason), this will automatically imply a 0 in this part of the course. Please take this into consideration when planning your semester.

PROFESSOR BIO

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Academic Background

PhD. Economics, Universidad del País Vasco, March 2013.

MPhil. Economics and Finance CEMFI, Spain. June 2009.

MPhil. Economics: Empirical Applications and Policies, U. País Vasco, Spain. June 2007.

Licenciado en Economía, Universidad del País Vasco, Spain. June 2006.

Academic Experience

Researcher at Fundación Novia Salcedo (NSF), Research Laboratory in Social Innovation, Bilbao. 2013

Teaching Assistant, Teoría Macroeconómica III (Undergraduate) for Professor Cruz Angel Echevarria, Universidad del País Vasco, 2011-2012

Researcher at Queen Mary, University of London (with Ghazala Azmat). 2012

Teaching Assistant, Statistical Methods in Econometrics (Graduate), for Prof. Stephane Bohonomme, CEMFI, Spain. Fall 2010

Teaching Assistant, Introduction to Statistics (Graduate), for Prof. Pedro Mira, CEMFI, Spain. September 2010

Teaching Assistant, Microeconomics (Graduate) for Prof. Guillermo Caruana, CEMFI, Spain. Fall 2009

Researcher at CEMFI, Madrid (with Stephane Bohonomme). Summer 2008

Teaching Assistant, El Mercado de Trabajo en España