Econometrics I 2014/2015

Code: 102308
ECTS Credits: 6

Degree	Type	Year	Semester
2501572 Administració i Direcció d'Empreses	OB	2	2
2501573 Economia	OB	2	2

Contact

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Use of languages

Principal working language: català (cat)
Some groups entirely in English: Yes
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: Yes

Prerequisites

It is highly recommended that the student has successfully completed Mathematics I, II and Statistics I, II. Having full command of the materials presented in these courses is essential to succeed in Econometrics I.

Objectives and Contextualisation

Econometrics I presents basic tools for the empirical analysis of relationships between economic variables. The course begins with the simple regression model, already introduced in Statistics II, and continues with multiple regression, including both quantitative and qualitative regressors.

The goal of this course is that students learn how to extract information from economic data using basic regression analysis, being able to rigorously assess the advantages and limitations of this tool. Major emphasis shall be placed on understanding the intuition behind the general theoretical aspects of econometric analysis. Throughout the course numerous applications using real data will be presented to help students learn to value the empirical applications of the tools introduced.

This course provides the fundamentals for the analysis of economic data that continues with the courses of Econometrics II and Econometric Models and Forecasting.

Skills

Administració i Direcció d'Empreses

- Apply the basic statistics for improving processes of analysis and systematisation of business information and learn rigorously and scientifically about the company chain of value.
- Capacity for adapting to changing environments.
- Capacity for independent learning in the future, gaining more profound knowledge of previous areas or learning new topics.
- Capacity for oral and written communication in Catalan, Spanish and English, which enables synthesis and oral and written presentation of the work carried out.
- Demonstrate initiative and work individually when the situation requires it
- Identify and apply econometric methodology to respond to the problems that appear in the empirical study of some economic data.
- Organise the work in terms of good time management, organisation and planning.

- Select and generate the information necessary for each problem, analyse it and take decisions based on that information.
- Take decisions in situations of uncertainty, demonstrating an entrepreneurial and innovative attitude.
- Use of the available information technology and adaptation to new technological environments.

Economia

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- Select and generate the information necessary for each problem, analyse it and take decisions based on that information.
- Take decisions in situations of uncertainty, demonstrating an entrepreneurial and innovative attitude.
- Use of the available information technology and adaptation to new technological environments.

Learning outcomes

1. A capacity of oral and written communication in Catalan, Spanish and English, which allows them to summarise and present the work conducted both orally and in writing.
2. Capacity to adapt to changing environments.
3. Capacity to continue future learning independently, acquiring further knowledge and exploring new areas of knowledge.
4. Demonstrate initiative and work independently when required.
5. Identify and apply the appropriate econometric methodology to respond to the problems appearing in the empirical study of some economic data.
6. Look for economic information from different sources: databases, Internet, etc.
7. Make decisions in situations of uncertainty and show an enterprising and innovative spirit.
8. Organise work, in terms of good time management and organisation and planning.
9. Prepare the data obtained from the sources for subsequent quantitative analysis.
10. Select and generate the information needed for each problem, analyse it and make decisions based on this information.
11. Use available information technology and be able to adapt to new technological settings.
12. Use information technology programmes to perform a quantitative analysis of the data.

Content

Unit 1: Introduction to econometric analysis

- What is econometrics? Objectives.
- Nature and structure of economic data.
- Causality versus correlation.

Unit 2: The simple regression model

- The simple linear regression model. The regression line.
- Least squares estimation. The fitted regression line.
- Goodness of fit. The coefficient of determination.
- Numerical properties of the estimator.
- Distribution of the estimator.
- Statistical properties of the estimator.
- Applications.

Unit 3: The multiple linear regression model: estimation

- The multiple linear regression model.
- Least squares estimation. Fitted model.
- The coefficient of determination and the adjusted coefficient of determination.
- Regression model and functional form.
- Distribution and properties of the estimator.
- The components of the variance of the OLS estimator.
- Estimation under the presence of collinearity.
- Applications.

Unit 4: The multiple linear regression model: inference

- Hypothesis testing with the t statistic. Individual significance test.
- Confidence intervals for a single regression parameter.
- Hypothesis testing using the F statistic.
- The F statistic using restricted least squares estimation. Global significance test.
- The use of dummy variables. Testing for structural change.
- Inference under the presence of collinearity.
- Applications.

Methodology

The course will be structured as follows:

1. Classroom Lectures

In the lectures, the key concepts and methods will be presented using examples to facilitate a clear understanding of the materials presented.

2. Computer room activities

In order to better grasp the different econometric concepts and methods some lectures will take place in the computer room. The econometric package Gretl, an open source software program, already used in Statistics II, will be used extensively.

3. In class problem solving

There will be problems set for each unit and it is expected that students will work on them in groups or on their own. This activity is crucial to assimilate the theoretical aspects and the applications of the tools presented. The instructor will select some exercises from the problems set list to be discussed in class, although students are expected to complete the entire problems set. The instructor might also use part of the problem solving activity as part of the grading.

4. Office hours

Students can use instructor's office hours to solve specific questions and get additional help. Office hours will be announced in either the intranet (Campus Virtual) or in the instructor's webpage.

5. Studying

It is expected that activities 1 to 4, described above, take about one third of the time that the student is supposed to dedicate to Econometrics I. In order to succeed in this course, students should anticipate spending an additional 100 hours or more of independent work in problem solving and studying.

Important :

- To successfully pass this course, class attendance is critical.
- For a good class environment: Everybody should arrive on time and plan on staying for the entire class.
- For a good class environment: Mobile phones should be off during lecture time.

Activities

Title	Hours	ECTS	Learning outcomes
Type: Directed			
In class problem solving	15	0.6	6, 5, 9, 12
Lectures	30	1.2	2, 5, 7, 10, 11
Type: Supervised			
Computer lab activities	7	0.28	2, 5, 4, 8, 7, 9, 10, 11, 12
Type: Autonomous			
Studying and problem solving	90	3.6	6, 2, 1, 3, 4, 5, 8, 7, 9, 10, 11, 12

Evaluation

1. Midterm exam

There will be a midterm covering contents of Unit 1 and 2. It will be a closed book exam. Grades will be given on a scale of 0 to 10. This exam will represent 20% of the overall grade.

2. Final exam

There will be a final exam covering the course content (Unit 1, 2, 3 and 4). It will be a closed book exam. Grade will be given on a scale of 0 to 10. This exam will represent 70% of the overall grade.

3. Submission of exercises

Occasionally, each student will be asked to submit some exercises from the exercises set. The instructor might ask students to solve these exercises for grading inclass. Grade will be given on a scale of 0 to 10. Assignments will represent 10% of the overall grade.

Grading Policy

a. After the final exam grade is available, a course grade will be given to each student. As explained, the course grade is calculated according to the following expression:

COURSE GRADE=0.1*EXERCISES + 0.2* MIDTERM + 0.7*FINAL

b. To pass the course the course grade should be at least 5.

c. All students must take exams and turn in assignments on their specified dates. No exceptions possible.

Assessment Calendar

The exam dates are set by the academic calendar of the Facultat d'Economia i Empresa.

Grades and Exam Review

After each grading activity, grades will be posted either in Campus Virtual or in the instructor's webpage. The date and place for each exam review will also be posted in the same manner.

Post-assessment

For those students who have obtained a course grade greater or equal to 4 but smaller than 5, therewill be a make-up exam. This post-assessment exam will be scheduled in the Facultat of Economia i Empresa exam calendar. This post-assessment exam is of the PASS/NO PASS form. Students who get a PASS, will pass the course and will get a course grade equal to 5. Students who get a NO PASS will fail the course and their course grade will remain unchanged.

Honor Code

Aside from other disciplinary measures that are considered appropriate, and according to the present academic rules, students that copy from another's examination, solicit or give unpermitted collaboration during grading activities will be awarded with a zero. Furthermore, it will not be possible to retake the grading activity during the same academic year.

Evaluation activities

Title	Weighting	Hours	ECTS	Learning outcomes
Assignments	10%	4	0.16	6, 3, 9, 11
Exam (Midterm and Final)	90%	4	0.16	2, 1, 4, 5, 8, 7, 10, 12

Bibliography

Course textbook: Wooldridge, J. M., Introductory Econometrics: A Modern Approach. South-Western Cengage learning. 5ed. 2013.