

**COURSE DATA****Data Subject**

<b>Code</b>	36111
<b>Name</b>	Econometrics I
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	6.0
<b>Academic year</b>	2023 - 2024

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. Period year</b>
1316 - Degree in Economics	Faculty of Economics	3 First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1316 - Degree in Economics	8 - Econometrics	Obligatory

**Coordination**

<b>Name</b>	<b>Department</b>
BELAIRE FRANCH, JORGE	10 - Economic Analysis
PEIRO GIMENEZ, AMADO	10 - Economic Analysis

**SUMMARY**

The objective of this course is to provide the basic knowledge of econometrics that is an essential tool for quantitative analysis of economic problems. The course aims to lay the foundations for further training in econometrics, either at your future job or in more advanced courses. This course emphasizes both the theoretical and the practical aspects of statistical analysis, focusing on estimation techniques for different econometric models and on testing hypotheses of interest to economists. Thus, equal importance is attached to the development of an intuitive understanding of the material that will allow these skills to be utilised effectively and creatively



## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

### Other requirements

It is recommended that the students have basic knowledge of matrix algebra, calculus, statistics and Economic theory acquired in previous courses.

## OUTCOMES

### 1316 - Degree in Economics

- Be able to collect and analyse information.
- Have decision-making skills and be able to apply knowledge to practice.
- Be able to learn autonomously.
- Be able to use ICTs.
- Apply the principles of economic analysis (rational decision) to the diagnosis and resolution of problems.
- Understand and apply the scientific method, which involves formulating hypotheses, deducing verifiable results and contrasting them with empirical and experimental evidence.
- Be able to prepare and defend an economic report.
- Know and understand the basic quantitative tools for economic analysis, diagnosis and prospection, such as mathematics, statistics and econometrics.

## LEARNING OUTCOMES

- Understand the nature and scope of econometrics as a social science
- Use statistical analysis, including the classical regression model, to estimate relevant economic parameters, predict economic outcomes, and test economic hypotheses using quantitative data.
- Understand the basic assumptions of the classical linear regression model, and identify and correct (if possible) any violations of these assumptions, such as heteroscedasticity.
- Structure and prepare a report based on the research work applied to a specific economic problem.
- Develop and maintain a working knowledge of econometrics that will provide a basic foundation for future study in econometrics and statistical techniques.



## DESCRIPTION OF CONTENTS

### 1. Introduction to Econometrics

- 1.1 What is Econometrics?
- 1.2 Steps in developing an econometric model .
- 1.3 Economic data.

### 2. The simple linear regression model

- 2.1 Some definitions in the simple regression model.
- 2.2 Obtaining the Ordinary Least Squares (OLS) Estimates.
- 2.3 Some characteristics of OLS estimators.
- 2.4 Units of measurement and functional form.
- 2.5 Assumptions and statistical properties of OLS.

### 3. The multiple linear regression model

- 3.1 The multiple linear regression model.
- 3.2 OLS estimates of the model.
- 3.3 Assumptions and statistical properties of the OLS estimators.
- 3.4 Goodness-of-fit and selection of regressors.

### 4. Hypotheses and distributions in the regression model

- 4.1 Hypothesis testing: an overview.
- 4.2 Formulation of the null hypothesis and the alternative hypothesis.
- 4.3 Test statistic.
- 4.4 Decision rule.
- 4.5 Probability distributions in econometrics.

### 5. Hypothesis testing

- 5.1 Testing hypotheses using the t test.
- 5.2 Testing multiple linear restrictions using the F test.
- 5.3 Model significance.
- 5.4 Structural stability tests.
- 5.5 Prediction.

**6. Regression models with qualitative variables**

- 6.1 Introducing qualitative information in econometric models.
- 6.2 A single dummy independent variable.
- 6.3 Multiple categories for an attribute.
- 6.4 Interactions involving dummy variables.
- 6.5 Testing structural changes.

**7. Relaxing assumptions in the linear classical model**

- 7.1 Multicollinearity.
- 7.2 Normality test.
- 7.3 Misspecification.

**8. Heteroskedasticity**

- 8.1 Causes of heteroskedasticity.
- 8.2 Consequences of heteroskedasticity.
- 8.3 Heteroskedasticity tests.
- 8.4 Dealing with heteroskedasticity.

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Classroom practices	30,00	100
Development of group work	5,00	0
Study and independent work	55,00	0
Preparation of evaluation activities	0,00	0
Preparing lectures	15,00	0
Preparation of practical classes and problem	15,00	0
<b>TOTAL</b>	<b>150,00</b>	

**TEACHING METHODOLOGY**

- Classes will consist of lectures and practical classes. On the course “aula virtual” webpage you will have slides for all lectures, and additional learning material for both theoretical and practical classes such as statistical information (such as <https://www.uv.es/uvweb/servei-biblioteques-documentacio/ca/recursos/acces-recursos/bases-dades-1285868957877.html>), exercises or readings.

- At the practical classes students will solve exercises on the computer and on the blackboard. Additionally, students must answer and hand in the tasks or assignments that will be asked thorough the course.



## EVALUATION

The subject of Econometrics will be evaluated through:

1. A final theoretic-practical written exam. This exam will be weighted 70%. However, this written test must be passed in order to pass the subject.
2. The remainder 30% will be the result of continuous evaluation. This continuous assessment can not be retaken.

The final exam must be passed in order to add the points from the continuous assessment (can not be retaken). If this is not the case, and the exam is not passed, the final grade won't be higher than 4.5 points out of 10, independently of the points obtained in the continuous assessment.

## REFERENCES

### Basic

- Wooldridge, J (2016). Introducción a la econometría. 5 ed. Cengage Learning.
- Wooldridge, J (2020). Introductory Econometrics A Modern Approach. 7ed. Cengage Learning.
- Uriel E. (2019) Introducción a la Econometria. Libro electrónico. Universitat de València. (Castellano, Valencià, english) <https://www.uv.es/uriel/libroin.htm>
- Contreras, D. y Belaire, J. (2000). Introducció a l'Econometria. Universitat de Valencia.

### Additional

- Stock J.H. y Watson M.M. (2019) Introduction to Econometrics, 4th Edition. Pearson.
- Stock J.H. y Watson M.M. (2012) Introducción a la Econometría. (3ª Ed.)
- Gujarati, D. y Porter D.C. (2010) Econometría (5ª Edición). McGraw-Hill.
- Greene, W. (2018). Econometric analysis (8th ed). Pearson
- Greene, W. (1999). Análisis Econométrico (3 edición). Prentice-Hall. Madrid