1. OVERVIEW

Subject area	Econometrics
Degree	Bachelor's Degree in Business Analytics
School/Faculty	Faculty of Economics, Business, and Communication Sciences
Year	2nd
ECTS	3 ECTS
Type	Compulsory
Language(s)	Spanish/ English
Delivery Mode	On campus/Online
Semester	Semester 4
Year	2024-25
Coordinating professor	Álvaro Salazar

2. INTRODUCTION

Econometrics is a compulsory subject within the Bachelor's Degree in Business Analytics, worth 3 ECTS credits. This subject area is part of the quantitative tools module and is taught in the second semester of the second year of the degree. Like the rest of the subjects in the same area of knowledge, Econometrics plays an important role within the analysis of the business environment in particular, as it is an indispensable tool for decision making. Econometrics allows us to objectively analyse and quantify the key factors of business activity and the economic environment in which companies and consumers operate.

3. SKILLS AND LEARNING OUTCOMES

Basic skills (CB, by the acronym in Spanish):

- CB1 - Students have shown their knowledge and understanding of a study area that builds on general secondary school education, and are usually at the level where, with the support of more advanced textbooks, they may also demonstrate awareness of the latest developments in their field of study.
- CB4 - Students can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.

Specific skills (CE, by the acronym in Spanish):

- CE10 - Ability to analyse, integrate and evaluate information from the economic environment, which is necessary for decision-making.
- CE14 - Knowledge of statistical and econometric tools for the analysis of economic and business variables.
- CE19: Knowledge of statistical and econometric tools for the analysis of economic and business variables.
- CE20 - Ability to develop a study plan of business variables and indicators.
- CE24 - Ability to identify the information needs, depending on the set objectives.
- CE26 - Critical thinking and objectivity to question the data and truths assumed on the basis of preceding data.
- CE32-"Business orientation: demonstrate through appropriate decision-making that the cost of obtaining information should be less than the benefit of applying it.
- CE33 - Ability to handle computer tools for statistical processing and other tools such as simulators with ease and technical solvency.

- **Learning outcomes (RA, by the acronym in Spanish):**
- RA1: Drawing up reports relating the main economic and financial variables by means of econometric techniques.
- RA2: Modelling behaviour of economic relations.
- RA3: Decision making in the business environment based on the analysis of data and economic and financial forecasting methods.

The following table shows how the skills developed in the subject area relate to the intended learning outcomes:

Skills	Learning outcomes (RA, by the acronym in Spanish)
CT12, CT18, CE10, CE14, CE19, CE20, CE24, CE33	**RA1:** Drawing up reports relating the main economic and financial variables by means of econometric techniques.
CT5, CE14, CE19, CT18,	**RA2:** Modelling behaviour of economic relations
CB1, CB4, CT13, CT17, CE26, CE32,	**RA3:** Decision making in the business environment based on the analysis of data and economic and financial forecasting methods.

4. CONTENTS

- Introduction to econometrics.
- The General Linear Model.
- Goodness of fit and statistical hypothesis testing.
- Qualitative independent variables.
- Multicollinearity.
- Heteroscedasticity.
- Autocorrelation.

The subject is organised into five learning units with theoretical and practical content, which in turn are each divided into four topics.

- Unit 1: Introduction to applied economic analysis: What is Econometrics used for?
  - Topic 1. Elements for the analysis.
  - Topic 2. The stages of econometric modelling.
  - Topic 3. Examples of econometric model application.
  - Topic 4. *Software* for econometric work.

The aims of this unit are to introduce students to the concepts, elements and econometric methods and encourage them to study the subject as a fundamental tool for decision making in the business world.

- Unit 2: Simple linear regression model (SLRM).
  - Topic 1. Simple linear regression model specification (SLRM).
  - Topic 2. Ordinary least squares estimation method (OLS).
  - Topic 3. Normality, inference and goodness of fit.
  - Topic 4. Full example of estimation and inference.

The aims of this unit are to learn and apply the methodology of econometric analysis and interpret the results in the basic general case.

- Unit 3: Sample problems in econometric analysis.
  - Topic 1. Multicollinearity: concept, causes, consequences and corrective action.
  - Topic 2. Full example of multicollinearity analysis.
  - Topic 3. Qualitative explanatory variables. ANOVA and ANCOVA models.
  - Topic 4. Full example of qualitative variable analysis.

The aims of this unit are to identify the main problems associated with non-compliance with the structural assumptions of SLRM and their consequences on the results obtained, as well as to know the correction methods and assess their risks. In addition, students will study the specification of qualitative explanatory variables through the use of ANOVA and ANCOVA models.

- Unit 4: The effects of diversity and time: the estimated SLRM residue diagnosis.
  - Topic 1. The effect of diversity: heteroscedasticity.
  - Topic 2. Full example on heteroscedasticity.
  - Topic 3. The effect of time: autocorrelation.
  - Topic 4. Full example on autocorrelation.

The aims of this unit are to identify the main problems associated with non-compliance with the assumptions for the SLRM error term and their consequences on the results obtained, as well as to know the correction methods and their effectiveness.

- Unit 5: Forecasting and other uses of econometric models.
  - Topic 1. Forecasting with the simple linear regression model and the multicollinearity effect.
  - Topic 2. Full example on forecasting.
  - Topic 3. Forecasting with heteroscedasticity and autocorrelation.
  - Topic 4. Full example on heteroscedasticity and autocorrelation.

The aims of this unit are to learn how to use an econometric model for forecasting and know other uses of econometric models.

5. TEACHING-LEARNING METHODS

The types of teaching-learning methods are as follows:

- Lecture / web conference.
- Case studies.
- Collaborative learning.
- Problem-based learning

6. LEARNING ACTIVITIES

The types of learning activities, plus the amount of time spent on each activity, are as follows:

Learning activity	Number of hours
Tutorials	5
Lectures	14
Asynchronous lectures	5
Case studies	6
Problem-solving	6
Oral presentations	2
Writing reports and papers	20
Knowledge tests	4
Independent working	13
TOTAL	

7. ASSESSMENT

The assessment systems, plus their weighting in the final grade for the subject area, are as follows:

Assessment system	Weighting
Knowledge test	50%
Oral presentations	10%
Case study/problem scenario	20%

Reports and papers	20%

On the Virtual Campus, when you open the subject area, you can see all the details of your assessable tasks and the deadlines and assessment procedures for each task.

7.1 Ordinary exam period

In order to pass in the ordinary exam period, the weighted average grade of all the tasks listed in the table (or, where appropriate, those indicated by the teacher) must be higher than or equal to 5, and you must obtain a grade higher than or equal to 5 in the knowledge test.

7.2 Extraordinary exam period (resits)

To pass the extraordinary exam period, you must submit the tasks indicated by the teacher, whose weighted average grade must be higher than or equal to 5, and obtain a grade higher than or equal to 5 in the knowledge test.

Tasks not passed in the ordinary exam period, or those not submitted, must be submitted in the extraordinary exam period.

8.TIMELINE

The timeline with delivery dates of assessable tasks in the subject area is indicated in this section:

Assessable tasks	Date

The timeline may be subject to modifications for logistical reasons. Students will be informed of any changes in due time and course.

9.BIBLIOGRAPHY

The recommended bibliography is indicated below:

Basic bibliography:

- Stock and Watson (2012): "Introducción a la Econometría.3ª edición". PEARSON EDUCACIÓN, S.A., Madrid.
- Wooldridge, J. (2013): "Introducción a la Econometría. Un enfoque moderno. Quinta edición". Thomson, Madrid.

Solved exercises bibliography:

- Pena, B. y otros (1999): "Cien Ejercicios de Econometría". Ed. Pirámide, Madrid.
- PÉREZ, C (2006): Problemas resueltos de Econometría. Thomson, Madrid.
- PÉREZ, C. (2008): Econometría Avanzada. Técnicas y Herramientas. Pearson. Prentice Hall.

Complementary bibliography:

- Alonso, A.; Fernández, J.; Gallastegui, I. (2005): "Econometría" Pearson Educación, Madrid.
- Carrascal, U., González, Y. y Rodríguez, B. (2000): "Análisis Econométrico con Eviews". Ed. Ra-ma, Madrid.
- Davidson, R. y Mackinnon, J. G. (1993): "Estimation and Inference in Econometrics". Oxford University Press, New York.
- Greene, W. H. (1999): "Análisis Econométrico". Tercera edición. Prentice Hall. Madrid.
- Gujarati, D. N. y Porter, D. C. (2010): "Econometría. Quinta edición". McGraw-Hill. México D. F.
- Johnston, J. y Dinardo, J. (2001): "Métodos de Econometría" Vicens Vives.
- Matilla García, M., Pérez Pascual, P. y Sanz Carnero, B. (2013): "Econometría y Predicción". McGrawHill. Madrid.
- NOVALES, A. (1997). Econometría (2ª ed.). Madrid: McGraw-Hill.
- Pindyck, R. S. And Rubinfeld, D. L. (2001): "Econometría. Modelos y pronósticos Cuarta edición". McGraw-Hill, Madrid.
- PULIDO, O. A. (2006). Guía para usuarios de predicciones económicas. Madrid: Ecobook (Editorial del Economista).
- Ramanathan, R. (1998): "Introductory Econometrics with Applications" Dryden Press, USA.
- Schmidt, S. J. (2005): "Econometría". McGraw-Hill, México, D.F.

10. EDUCATIONAL GUIDANCE, DIVERSITY AND INCLUSION UNIT

From the Educational Guidance, Diversity and Inclusion Unit we offer support to our students throughout their university life to help them reach their academic achievements. Other main actions are the students inclusions with specific educational needs, universal accessibility on the different campuses of the university and equal opportunities.
From this unit we offer to our students:

1. Accompaniment and follow-up by means of counselling and personalized plans for students who need
to improve their academic performance.
2. In terms of attention to diversity, non-significant curricular adjustments are made in terms of methodology and assessment for those students with specific educational needs, pursuing an equal opportunities for all students.
3. We offer students different extracurricular resources to develop different competences that will encourage their personal and professional development.
4. Vocational guidance through the provision of tools and counselling to students with vocational doubts or who believe they have made a mistake in their choice of degree.

Students in need of educational support can write to us at:
orientacioneducativa@universidadeuropea.

11. STUDENT SATISFACTION SURVEYS

Your opinion matters!

Universidad Europea encourages you to complete our satisfaction surveys to identify strengths and areas for improvement for staff, the degree and the learning process.

These surveys will be available in the surveys area of your virtual campus or by email.

Your opinion is essential to improve the quality of the degree.

Many thanks for taking part.