COURSE PROGRAM

Academic Year: 2024/2025

Identification and characteristics of the course				
Code	500425	ECTS Credits		7
Course name (English)	ECONOMETRICS II			
Course name (Spanish)	ECONOMETRÍA II			
Degree programs	-Bachelor's Degree in Economics (GECO) -Bachelor's Double Degree in Business Administration and Management, and Economics (PCEO GADE-GECO)			
Faculty/School	Faculty of Economics and Business Administration			
Semester	5 (ECO) / 7 (ADE-ECO)	Type of course	Compulsory	
Module	Quantitative Methods for Economics			
Matter	Statistics-Econometrics			

Lecturer/s			
Name	Office	E-mail	Web page
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Subject Area	Quantitative Methods for Economics and Business
Department	Economics
Coordinating Lecturer (If more than one)	

Competencies

Basic competences: CB1, CB2, CB3, CB4, CB5

CB1 – Students should have demonstrated and understood a basic level of the knowledge field showing a progress of knowledge from a secondary school level to a higher advanced level using vanguard studies of the field.

CB2 – Students should be able to apply their knowledge to their work or vocation in a professional way. Students should possess the skills that are usually demonstrated through argument elaboration and defense and problem solving within their area of study.

CB3 – Students should have the ability to collect and interpret relevant data (usually within their area of study) to make judgments that include a reflection on relevant social, scientific, or ethical issues.

CB4 – Students should be able to transmit information, ideas, problems, and solutions to specialized and non-specialized audiences.
CB5 – Students should have developed those learning skills necessary to undertake further studies with a high degree of autonomy.

General competences: CG1, CG2, CG3, CG4
CG1 – Ability to identify and anticipate relevant economic problems in the private and/or public domains, to discuss the alternative solutions, and to select the most appropriate ones.
CG2 – Ability to provide rationality for the analysis and description of any aspect of economic reality.
CG3 – Ability to apply professional criteria based on the management of technical instruments to the analysis of economic problems.
CG4 – Ability to design, manage and write economic projects and to issue advice reports on specific situations of the (international, national, or regional) economy.

Transversal competences: CT1, CT2, CT4, CT5, CT8, CT9, CT10, CT11
CT1 - Computer literacy and information and communications technology (ICT) skills.
CT2 – Oral and written communication skills in Spanish.
CT4 – Ability to manage, analyze, and synthesize information.
CT5 – Ability to work in a team.
CT8 – Independent learning ability.
CT9 – Critical thinking and self-criticism.
CT10 – Ability to solve problems.
CT11 – Ability to make decisions.

Specific competences: CE5, CE6
CE5 – Ability to know, understand, and use the principles of statistics.
CE6 – Ability to know, understand, and use the principles of econometrics.

Contents

Course outline

TESTING AND EXTENDING THE BASIC LINEAR REGRESSION MODEL

The main and secondary objectives of this course are the following:

a) The main objectives are to test the basic assumptions of the linear regression model, to propose alternative solutions in case of assumption violation, and to interpret the selected model results from econometric and economic perspectives.

b) The secondary objectives are to collect and manage economic data, to use the econometric software *gretl*, and to evaluate the econometric analyses conducted in different economic studies.

Course syllabus

Title of Unit 1: Testing and Extending the Basic Linear Regression Model: Advanced Topics on Functional Forms

Contents of Unit 1:
1.1. Structural change: regressions with varying parameters
1.2. Non-linearity: the nonlinear least squares estimator
Description of practical activities for Unit 1:
Testing the basic hypotheses of the linear regression model related to the functional specification: carrying out the corresponding statistical tests and corrections with the gretl software.

Title of Unit 2: Testing and Extending the Basic Linear Regression Model: Advanced Topics on the Error Term

Contents of Unit 2:
2.1. Non-normality of errors: robust estimation
2.2. Heteroscedastic regressions
2.3. Autocorrelation regressions and dynamic econometric models
Description of the practical activities of Unit 2:
Testing the basic hypotheses of the linear regression model related to the error term: carrying out the corresponding statistical tests and corrections with the gretl software. Specification and estimation of dynamic models.

Title of Unit 3: Testing and Extending the Basic Linear Regression Model: Advanced Topics on Sample Information

Contents of Unit 3:
3.1. Collinearity between explanatory variables
3.2. Missing data
3.3. Aggregation of data
3.4. Measurement errors, simultaneous equations and stochastic regressors
3.5. Outliers
3.6. Data panels
3.7. Discrete or limited dependent variable
Description of the practical activities of Unit 3:
Testing the basic hypotheses of the linear regression model related to the available sample information: carrying out the corresponding tests and statistical corrections with the gretl software.

Educational activities

Student workload in hours by lesson		Lectures	Practical activities				Monitoring activity	Homework
Lesson	**Total**	**L**	**HI**	**LAB**	**COM**	**SEM**	**SGT**	**PS**
1. Theory	19	7,5	—	—	—	—	—	11,5
1. Practice	24,5	7,7	—	—	—	3	0,8	13
2. Theory	20,5	7,5	—	—	—	—	—	13
2. Practice	26,5	7,7	—	—	—	3	0,8	15
3. Theory	20,5	7,5	—	—	—	—	—	13
3. Practice	29	9,1	—	—	—	4	0,9	15
Assessment	10	3	—	—	—	—	—	7
TOTAL	**150**	**50**	**—**	**—**	**—**	**10**	**2,5**	**87,5**

L: Lectures (85 students)
HI: Hospital internships (7 students)
LAB: Laboratory or field practices (15 students)
COM: Computer room or language laboratory practices (20 students)
SEM: Problem classes or seminars or case studies (40 students)
SGT: Scheduled group tutorials (educational monitoring, ECTS type tutorials)
PS: Personal study, individual or group work and reading of bibliography

Teaching Methodologies

1. Expository method consisting of the presentation by the teacher of the contents on the subject of study.
2. Expository method that consists of the presentation by the teacher of examples or problems and the way to solve them.

3. Method based on the presentation of problems by the teacher and their resolution by the students through the application of problem-solving procedures.
4. Method based on the intensive analysis of real or simulated cases in order to interpret, solve, reflect and complete knowledge.
5. Collaborative method for group work that allows to broaden and deepen theoretical knowledge by searching relevant sources of information and data and applying them.
6. Method by which the students perform some test that serves to reinforce their learning and as an evaluation tool.

Learning outcomes

Recall information, concepts and theories that can be used later in the quantitative analysis of economic situations.
Understand the information, concepts or theories learned in order to reformulate and structure them through statistical-mathematical models.
Apply the information, concepts or theories learned to face new situations, solve economic problems using appropriate techniques and instruments, and collect, manipulate and interpret relevant current data on the Spanish, European and world economy.
Analyse economic phenomena to reach cause-effect conclusions, make inferences and interpret data identifying patterns and trends, and relate them to the theoretical concepts acquired.
To evaluate the relevance, adequacy or operability of certain situations and measures adopted in the framework of the national, European or international economy.

Assessment systems

There are two methods of assessment: (a) continuous assessment, and (b) final examination. In both assessment methods, students must achieve a minimum overall grade of 5 points on a grading scale from 0 to 10 in order to pass the course.
The student must notify the professor (via the University of Extremadura's Virtual Campus) the type of assessment that he or she has chosen in the first three weeks of each semester. If there is no notification, continuous assessment will be selected as the default method. Once the student has chosen the type of assessment, his or her preferred method cannot be changed during the semester.
For legal aspects, see «Normativa de Evaluación de las Titulaciones oficiales de Grado y Máster de la Universidad de Extremadura», DOE No. 212, November 3, 2020 (in Spanish).

a) Continuous assessment

This system consists of the following written activities:

- Course assignments. Complementary out-of-class activities are proposed by the professors.
- End-of-semester test. Theoretical and practical contents and skills of the first and second thematic modules are evaluated.
- Final exam (if necessary). Theoretical and practical contents and skills of the two course units are evaluated.

Any unsubmitted course assignments will be awarded zero points each. The course assignments' grades are valid for the current academic year only.

Once written test is completed, the overall grade of the course is obtained as follows:

Overall course grade =
10% Continuous assessment assignments' grades +
90% (End-of-semester test grade) (1)

To pass the course, students must sit both examinations, must secure no less than 4 out of 10 points in each written test, and must obtain an overall grade (eq. 1) of at least 5 out of 10 points.

The student who does not secure an overall grade (eq. 1) of 5 out of 10 points or more can sit the final exam.

Once the final exam of the continuous assessment method is completed, the overall grade of the course is obtained as follows:

Overall course grade =
10% Continuous assessment assignments' grades + 90% Final exam grade (2)

To pass the course, students must obtain an overall grade (eq. 2) of at least 5 out of 10 points.

According to University of Extremadura (UEx) regulations, there are two opportunities per academic year to take the course final exam, the "ordinary call" in June and the "extraordinary call" in July. Students must check in advance that they are entitled to take an exam or will not be evaluated. The final exam dates and times will be published on the website of the UEx's Faculty of Economics and Business Studies [https://www.unex.es/conoce-la-uex/centros/eco] before the end of classes.

b) Final examination

This system consists of a single written test:

- Final exam. Theoretical and practical contents and skills of all course units are evaluated.

The final exam of the final examination method can be different from the final exam of the continuous assessment method since the former must also evaluate the contents and skills covered in the continuous assessment assignments.

Once the final exam of the final examination method is completed, the overall grade of the course is obtained as follows:

Overall course grade = 100% Final exam grade (3)

To pass the course, students must obtain an overall grade (eq. 3) of at least 5 out of 10 points.

According to University of Extremadura (UEx) regulations, there are two opportunities per academic year to take the course final exam, the "ordinary call" in June and the "extraordinary call" in July. Students must check in advance that they are entitled to take an exam or will not be evaluated. The final exam dates and times will be published on the website of the UEx's Faculty of Economics and Business Studies [https://www.unex.es/conoce-la-uex/centros/eco] before the end of classes.

Bibliography (basic and complementary)

Basic bibliography

Theory and practice

- Hill, R.C., Griffiths, W.E., and Lim, G.C. (2018). Principles of Econometrics, 5th Edition. Wiley.
- Adkins, L.C. (2018). Using gretl for Principles of Econometrics, 5th Edition, Version 1.0. Retrieved from https://www.learneconometrics.com/gretl/index.html

Supplementary bibliography

Theory and practice

- Brooks, C. (2019). Introductory Econometrics for Finance, 4th Edition. Cambridge University Press.
- Stock, J.H. and Watson, M.M. (2020), Introduction to Econometrics, 4th Edition, Pearson.
- Wooldridge, J.M. (2020). Introductory Econometrics. A Modern Approach, 7th Edition. Cengage Learning.

Other resources and complementary educational materials

Throughout the course, other suitable material will be provided via the University of Extremadura's Virtual Campus [https://campusvirtual.unex.es/portal/], and the dedicated course webpage https://sites.google.com/site/rmneconometria/.