Quantitative Research Methods in Applied Research in Economics and Business

2023/2024

Code: 42620
ECTS Credits: 15

Degree	Type	Year	Semester
4313384 Applied Research in Economics and Business	OB	0	1

Contact

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Teaching groups languages

You can check it through this link. To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

Teachers

Jose Rialp Criado

Karen Davtyan

Isabel Narbón Perpiña

David Enrique Castells Quintana

Prerequisites

There are not prerequisits.

Objectives and Contextualisation

To provide the students with the technical and quantitative tools necessary to carry out applied research in economics and business.

Competences

- Possess and understand knowledge that provides a basis or opportunity for originality in the development and/or application of ideas, often in a research context
- Produce and draft projects, technical reports and academic articles in English, making use of the appropriate terminology, argumentation, communication skills and analytical tools for each context, and rigorously evaluate those produced by third parties.

- Select and apply different and adequate models and/or theoretical frameworks, methodologies and techniques for scientific research, data sources and IT tools for research applied to business and economics.
- Student should possess an ability to learn that enables them to continue studying in a manner which is largely self-supervised or independent
- Understand, analyse and evaluate the complexity, functions and main challenges of the current socio-economic and business reality using analytical tools and/or precise methodologies.
- Work in international and inter-disciplinary teams.

Learning Outcomes

1. Apply the main quantitative techniques of multivariate analysis for the testing of scientific hypotheses.
2. Identify the main scientific methodologies of a quantitative nature that are usable in the field of research applied to business and economics.
3. Possess and understand knowledge that provides a basis or opportunity for originality in the development and/or application of ideas, often in a research context
4. Produce and draft projects, technical reports and academic articles in English, making use of the appropriate terminology, argumentation, communication skills and analytical tools for each context, and rigorously evaluate those produced by third parties.
5. Student should possess an ability to learn that enables them to continue studying in a manner which is largely self-supervised or independent
6. Understand the mathematical, statistical and econometric fundaments and instruments required for statistical inference.
7. Utilize existing IT tools and packages (STATA, SPSS, etc.) for the quantitative analysis of statistical, business and bibliographic databases.
8. Work in international and inter-disciplinary teams.

Content

This module has 4 topics. The contents of these topics are the following:

[Mathematics](#)

1- One-Variable Calculus.

2- Matrix and Vector Algebra, and Calculus of Several Variables.

3- Optimization.

[Applied Statistics](#)

1- Analysis of one variable

2- Sampling and sampling distribution

3- Estimate using intervals

4- Test of hypotheses

5- Analysis of the relation between two variables: Contingency tables

[Econometrics](#)

1. Introduction

2. Simple Linear Regression

3. Multiple Linear Regression

4. Statistical Inference for Multiple Linear Regression

5. Specification Issues in Multiple Linear Regression

6. Qualitative Variables and Multiple Linear Regression

[Multivariate analysis](#)

1- Introduction and classification of multivariate analysis techniques

2- ANOVA and MANOVA

3- Principal Components Factor analysis

4- Correspondence factor analysis

5- Discriminant Analysis and logit

6- Cluster Analysis

7- Regressions with panel data

8- Structural Equation Models

Methodology

Classes, essays and tutorials. Study and research activity.

The proposed teaching methodology may undergo some modifications according to the restrictions imposed by the health authorities on on-campus courses.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Classes	93.75	3.75	1, 2, 3, 4, 5, 6, 7, 8
Type: Supervised			
Essays and tutorials	56.25	2.25	1, 2, 3, 4, 5, 6, 7, 8
Type: Autonomous			
Study and research activities	212	8.48	1, 2, 3, 4, 5, 6, 7, 8

Assessment

Calendar of evaluation activities

The dates of the evaluation activities of the module (final exams, exercises in the classroom, assignments...) will be announced well in advance during the semester.

"The dates of evaluation activities cannot be modified, unless there is an exceptional and duly justified reason why an evaluation activity cannot be carried out. In this case, the degree coordinator will contact both the teaching staff and the affected student, and a new date will be scheduled within the same academic period to make up for the missed evaluation activity." Section 1 of Article 115. Calendar of evaluation activities (Academic Regulations UAB). Students of the Faculty of Economics and Business, who in accordance with the previous paragraph need to change an evaluation activity (mainly final exam/s) date must process the request by filling out an Application for exams' reschedule:
https://eformularis.uab.cat/group/deganat_feie/application-for-exams-reschedule

Grade revision process

After all grading activities of the module have ended, students will be informed of the date and way in which the module grades will be published. Students will be also be informed of the procedure, place, date and time of grade revision following University regulations.

Retake Process

"To be eligible to participate in the retake process of the module, it is required for students to have been previously evaluated for at least two thirds of the total evaluation activities of the module." Section 3 of Article 112 ter. The recovery (UAB Academic Regulations). Additionally, it is required that the student will have achieved an average grade of the module between 3.5 and 4.9.

The date of the retake exam will be duly announced by the coordination of the program. Students who take this exam and pass, will get a grade of 5 for the module. If the student does not pass the retake, the grade will remain unchanged, and hence, student will fail the module.

Irregularities in evaluation activities

In spite of other disciplinary measures deemed appropriate, and in accordance with current academic regulations, "in the case that the student makes any irregularity that could lead to a significant variation in the grade of an evaluation activity, it will be graded with a 0, regardless of the disciplinary process that can be instructed. In case of various irregularities occur in the evaluation of the same module, the final grade of this module will be 0" Section 10 of Article 116. Results of the evaluation. (UAB Academic Regulations).

Not Assessed Grade

A student can obtain "Not Assessed" grade in the module only when he/she has not participated in any of the evaluation activities within it. Therefore, students who perform even only one evaluation component cannot obtain "Not Assessed" grade in the module.

The proposed evaluation activities may undergo some changes according to the restrictions imposed by the health authorities on on-campus courses.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Class attendance	5%	0	0	1, 2, 3, 4, 5, 6, 7, 8
Exams	60%	8	0.32	1, 2, 3, 4, 5, 6, 7, 8

Bibliography

- Angrist, Joshua David, Jörn-Steffen Pischke, and Jörn-Steffen Pischke. Mostly harmless econometrics: an empiricist's companion. Princeton: Princeton university press, 2009.
- Cameron, Adrian Colin, and Pravin K. Trivedi. Microeconometrics using Stata. College Station, TX: Stata press, 2009.
- Davison, R. and J. MacKinnon, (2004), Econometric Theory and Methods.Oxford Univ.Press.
- Dougherty, Christopher. Introduction to econometrics. Oxford University Press, 2011.
- Green, W. (2008), Econometric Analysis. Prentice Hall.Sixth edition.
- Hair, J.F.; Black, W.C.; Babin, B.J. and R.E. Anderson(2010), Multivariate Data Analysis. Prentice Hall (7th edition).
- Hayashi, F. (2000), Econometrics.Princeton University Press.
- Hubbard,J H. (1999).Vector Calculus, Linear Algebra and Differential forms (a unified approach),Prentice Hall
- Newbold, P.(2009) "Statistics for Business and Economics". Prentice-Hall, 7th Edition.
- Sydsaeter, K., Hammond,P. and A. Strom (2012).Essential Mathematics for Economic Analysis, Pearson.
- Verbeek, Marno. A guide to modern econometrics. John Wiley & Sons, 2008.
- Wooldridge, Jeffrey M. (2013), Introductory Econometrics: A Modern Approach, 5th Edition. Cengage Learning.

Software

- Text editors (Word, Pages, LaTeX, ...).
- Spreadsheets (Excel, Numbers, LaTeX, ...).
- Slide show presentation (PowerPoint, Keynote, LaTeX, ...).
- Statistical/Econometric software and/or for data management (Stata, R, Eviews, Python, ...).