



## BACHELOR DEGREE IN BUSINESS ADMINISTRATION AND MANAGEMENT

### SUBJECT

### ECONOMETRICS

#### NUMBER OF CREDITS (ECTS)

9 (4.5 lectures + 4.5 practical classes: 2.0 classroom practical classes + 2.5 computer lab classes)

#### YEAR/SEMESTER

2<sup>nd</sup>/2<sup>nd</sup>

#### LEARNING OUTCOMES

The course focuses on two different tools to describe the nature of a random variable, and predict future values of it: regression models and time series models.

The first part of the course begins with the basic elements of the linear regression models, including regression by groups, graphical and analytical validation of a multiple linear regression model (heteroscedasticity, autocorrelation, multicollinearity, etc.). This first part ends with model selection criteria.

The second part of the course deals with time series model. Firstly, the classic time series model (which divides a series into its four basic components) is introduced. Since this classic approach is not always accurate, the course continues with an introduction of stochastic models, more specifically, ARIMA models. Graphical and analytical validation of ARIMA models is presented. This part ends with ARIMA models selection criteria.

The course is designed so that the student understands when each of the proposed techniques is to be applied, and how to interpret the results obtained. The final goal is that the student is able to properly quantify the economic situation of a company, and is able to predict such economical behaviour.

#### Specific Student Outcomes

- Know how to apply the basic tools of a quantitative nature for the diagnosis, analysis and business prospectation.
- Critical information synthesis from diverse sources.
- Efficient work planning.

	<ul style="list-style-type: none"> <li>- Oral and written communication.</li> <li>- Provide creative solutions in solving problems. / Successfully solve multidisciplinary problems.</li> <li>- Working in multidisciplinary teams</li> <li>- Working in diverse environments</li> <li>- Learn autonomously</li> <li>- Work applying criteria of quality and sustainability</li> <li>- Ethical commitment at work</li> <li>- Ability to develop, analyze and interpret accounting information</li> <li>- Ability to develop, analyze and interpret business information in the company</li> <li>- Ability to make financial decisions</li> <li>- Ability to develop, analyze and interpret the processes of organization and management in the company.</li> </ul>
<b>SYLLABUS</b>	<p><b>INTRODUCTION</b></p> <p>0. Introduction</p> <p><b>REGRESSION MODELS</b></p> <p>1. Multiple Linear Regression. Ordinary Least Squares</p> <p>2. Qualitative explanatory variables</p> <p>3. Graphical validation of the regression model</p> <p>4. Multicollinearity</p> <p>5. Heteroscedasticity</p> <p>6. Autocorrelation</p> <p>7. Regression Model Selection</p> <p><b>TIME SERIES MODELS</b></p> <p>8. Stochastic Models</p> <p>9. ARIMA Models for Time Series</p> <p>10. Analysis and Validation of ARIMA Models. Box Jenkins Methodology.</p>
<b>ASSESSMENT</b>	<p>Students' assessment is based on continuous evaluation. Twelve tests are proposed, one per week (PRACTICAL ACTS), to be done in small groups, during the practical lab sessions. Besides, an individual final exam (FINAL EXAM) is proposed. The final grade on this course consists of 60% of the average in the PRACTICAL ACTS plus 40% of the grade in the FINAL EXAM. In case of exemption from attendance, the evaluation is based on a unique exam.</p> <p>FINAL EXAM: Open answer written test, to be done on the last week of the course. A minimum score of 4 points (over 10) is required in this test in order to pass the course.</p>

**PRACTICAL ACTS:** There are 12 programmed weekly evaluation acts, consisting on the resolution of a practical case with the help of a software. No more than 3 unjustified absences are allowed. The unjustified absence of an act causes the corresponding act to be valued with a zero. A justified absence makes the corresponding evaluation to not count in the final average. The attendance is controlled by means of a written report of the case resolution.

Cases involve the analysis and resolution of a real situation that arises.

Open-answer written test require for the student to write answers to questions related to the course. Reference material (such as the course formulary) may be consulted during the exam.