

COURSE GUIDE 2017-18

DETAILS OF THE COURSE			
Subject:	Advanced Statistics		
Code:	63102202	Studies:	Grade in Economy
Year:	2017-18	Level:	Grade
Course:	2nd	Type:	Compulsary
Length:	1st Semester		
TIMING			
ECTS Credits:	6		
Total Hours:	150		
ONLINE LEARNING:			
	Teaching support		

LECTURERS			
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CONTEXT	
Main objective of the course	
<p>This subject strengthens the approach of statistics as a tool for obtaining and analyzing business information as well as information about the economic and social environment through the treatment and modelling of databases using statistical inference techniques. This way, the procedures included in this subject provide us with methods to infer properties of a population from a small part of it, called sample. This subject also offers the student the opportunity to learn and practice with the statistical software SPSS, which will be used to perform the statistical studies with databases.</p>	
Previous knowledge	
<p>This subject is a continuation of 1st course subject Statistics. Some knowledge of the subject Maths of 1st course is also needed</p>	
Prior conditions	
None	

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COMPETENCIES	
General	
<i>UAL transverse competencies</i>	
<ul style="list-style-type: none"> • Basic knowledge of the profession • Problem solving skills 	
<i>Basic competencies</i>	
<ul style="list-style-type: none"> • Having and understanding knowledge 	
Specific competencies	
<ul style="list-style-type: none"> • AFB02: Knowing and applying the basic concepts of Statistical Inference • FBC12: Acquiring skills and master computer tools applied to different areas 	
LEARNING OBJECTIVES AND RESULTS	
<p>-UAL1: Knowledge, skills and attitudes which facilitate understanding of new theories, interpretations, methods and techniques within different curricular fields, leading to meet the professional requirements.-</p> <p>UAL3: The ability to identify, analyse and define the main parts of a problem in order to solve it rigorously</p> <p>-RD1: The student must show knowledge and understanding in a field of knowledge that starts from the ESO level, but is in a higher level, supported by advanced text books, and includes some knowledge from the vanguard of the field.</p> <p>-AFB02: Knowing and understanding of Statistical Inference methods. Analyzing statistically a set of data, interpreting the results and drawing conclusions.</p> <p>-FBC12: Knowing and operating with ease the computer programs for statistical and mathematical analysis.</p>	
CONTENTS	
Units	
Unit 1: Independence and Distributions of interest	
1. Independence 2. Expectation and variance 3. Reproductivity 4. Central limit theorem 5. Normal associated distributions	
Unit 2: Samples and statistics	
1. General setting of Inference and basic concepts 2. Parametric point estimation: • Sample mean, variance and proportion. • Mean square error • Properties: Unbiasedness, relative efficiency and consistency.	
Unit 3: Confidence intervals and hypothesis tests estimation	
1. General setting of a confidence interval 2. General methodology to obtain a confidence interval 3. General setting of the a parametric hypothesis test • Error types • Power of a test • P-value concept 4. General methodology to obtain a hypothesis test 5. Determination of confidence intervals and hypothesis tests of frequent use	

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Unit 4: Non-parametric hypothesis tests

1. General setting of the problem 2. Normality tests 3. Independence chi-square test 4. Randomness test

Unit 5: Analysis of variance

1. Introduction 2. The means test. The ANOVA table 3. Ad hoc comparisons. Analysis of mean differences. 4. Checking previous assumptions. Analysis of residuals 5. Non parametric alternative: Kruskal-Wallis test

Unit 6: Linear regression model

1. Introduction. The simple linear regression model. 2. Parameter estimates 3. Inferences over the model 4. Checking previous assumptions.

Methodology and activities

- Lectures
- Solving exercises
- Practical lessons with a statistical software
- Evaluation sessions

Teaching Innovation Activities

We use the problem-based learning methodology to deal with the confidence intervals.

We use a case study in a real scenario in which students will be required to analyse real data, make a presentation to their client

EVALUATION OF THE COMPETENCIES

Criteria

The total mark of the subject is 10 points, divided this way:

1) **Three points (30%)**, as a maximum can be obtained in the evaluation of the activities proposed during the semester. **(Evaluation of competencies: UAL1, UAL3, RD1, AFB02 y FBC12).**

2) **Seven points (70%)**, as a maximum can be obtained in the evaluation of one or several tests whose contents correspond to the ones that have been dealt with during the previous practical lessons and theoretical-practical exercises to check if the student has reached the objectives. The clarity in the concept understanding, the correct use of the statistical vocabulary and notation and the statistical reasoning skill will be valued. **(Evaluation of competencies: UAL1, UAL3, RD1, AFB02 y FBC12).**

The marks of 1) obtained during the course, will be maintained for the extraordinary exam in September

Follow up

- On-line platform sign in and access.

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- Handing in activities in class.
- Handing in activities through on-line platform.

BIBLIOGRAPHY OF THE COURSE


Recommended Reading

- Practical Business Statistics -6th edition (Andrew F. Siegel)
- SPSS Statistics 19 Guide to Data Analysis - With CD (Marija Norusis)
- Statistics for business and financial economics (Cheng F. Lee, John C. Lee y Alice C. Lee)
- Statistics for business and economics (David R. Anderson, Dennis J. Sweeney, Thomas A. Williams)

Bibliography link

<http://almirez.ual.es/search/x?SEARCH=63102202>

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