


COURSE GUIDE 2018-19

DETAILS OF THE COURSE			
Subject:	Advanced Statistics		
Code:	63102202	Studies:	Grade in Economy
Year:	2018-19	Level:	Grade
Course:	2nd	Type:	Compulsary
Length:	1st Semester		
TIMING			
ECTS Credits:	6		
Total Hours:	150		
ONLINE LEARNING:			
	Teaching support		

LECTURERS			
Name	Morales Giraldo, María Encarnación		
Department	Dpto. de Matemáticas		
Office	CITE III - 2.46		
Phone number	+34 950 015813	Phone number	mmorale@ual.es
Personal web page	Web de Morales Giraldo, María Encarnación		
Name	Rumí Rodríguez, Rafael		
Department	Dpto. de Matemáticas		
Office	CITE III - 2.70		
Phone number	+34 950 214754	Phone number	rrumi@ual.es
Personal web page	Web de Rumí Rodríguez, Rafael		

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 AND OBJECTIVES

General

UAL transverse competencies

- Basic knowledge of the profession
- Problem solving skills

Basic competencies

- Having and understanding knowledge

Specific competencies

- **AFB02:** Knowing and applying the basic concepts of Statistical Inference
- **FBC12:** Acquiring skills and master computer tools applied to different areas

LEARNING OUTCOMES

- 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.-UAL3: The ability to identify, analyse and define the main parts of a problem in order to solve it rigorously
- 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 that vanguard of the field.
- AFB02: Knowing and understanding of Statistical Inference methods. Analysing statistically a set of data, interpreting the results and drawing conclusions.
- FBC12: Knowing and operating with ease the computer programs for statistical and mathematical analysis.

CONTENTS

Syllabus

- **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. 3- Mean square error. 4- 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 a parametric hypothesis test: Error types, Power of a test and P-value concept.

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4- General methodology to obtain a hypothesis test. 5- Determination of confidence intervals and hypothesis tests of frequent use.

- **Unit 4: Non-parametric hypothesis tests**

1- General setting of the problem. 2- Normality tests. 3- Independence chi-square test. 4- Randomness test. 5.-Mann-Withney and Wilcoxon tests.

- **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.
- Deliverables.

Teaching Innovation Activities

- Case study method.
- Cooperative learning.
- Flipped classroom.

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).**

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The marks of continuous assessment (1) obtained during the course, will **be maintained for the extraordinary exam in September** and only can be obtained if the assignments are submitted in time. Students neither can retake this part nor ask for its assessment in September call

Follow up

- On-line platform sign up and access.
- 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)

Existing bibliography in the UAL Library System

You can check the existing bibliography in the University Library in the following link:

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

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