

## COURSE GUIDE 2019-20

### DETAILS OF THE COURSE

Name:	Statistics		
Code:	63101103	Studies:	Grade in Economy
Year:	2019-20	Level:	Grade
Course:	1	Type:	Compulsary
Semester:	2nd Semester		

### TIMING

ECTS credits:	6
Total Hours:	150
ONLINE LEARNING :	Teaching support

### LECTURER

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### CONTEXT

#### Main objective of the course

The main issue of this subject is that students acquire the competitive advantage of being comfortable and competent around data and uncertainty. Statistical analysis helps extract information from a vast amount of information. Probability helps understand risky and random events, providing a way of evaluating the likelihood of various potential outcomes.

#### Previous knowledge

Some basic knowledge of the subject Maths of 1st semester is needed (limit and continuity, derivatives and basic integral calculation)

#### Prior conditions

None

### COMPETENCIES AND OBJECTIVES

#### General

#### *UAL transverse competencies*

- Basic knowledge of the profession
- Problem solving skills

### *Basic competencies*

- Having and understanding knowledge.

### Specific competencies

- **FBC05:** Knowing and applying the basic concepts of Statistics.
- **FBC12:** Acquiring skills and master computer tools applied to Statistics.

### 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 secondary education, but is in a higher level, supported by advanced text books, and includes some knowledge from the vanguard of the field.

-FBC05: Knowing and understanding of numerical summary measures, probability concepts and probability distributions. 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

#### **PART I: DESCRIPTIVE STATISTICS**

- UNIT 1: DATA ANALYSIS WITH ONE VARIABLE.
  - 1.1. Frequency distributions.
  - 1.2. Charts and graphs.
  - 1.3. Numerical summary measures.
  - 1.4. Measures of variability.
- UNIT 2: DATA ANALYSIS WITH TWO VARIABLES.
  - 2.1. Joint, marginal and conditional frequency distributions.
  - 2.2. Scatterplots and correlation.
  - 2.3. Linear regression.
  - 2.3. Nonlinear relationship.

#### **PART II: INDEX NUMBERS**

- UNIT 3: INDEX NUMBERS.
  - 3.1. Interpretation of an index number.
  - 3.2. Simple, aggregate and weighted index numbers.
  - 3.3. Weighted aggregative price index.

- 3.4. Changing the base year.
- 3.5. Using a Price Index to deflatate.

### **PART III: PROBABILITY**

- UNIT 4: PROBABILITY.
  - 4.1. Definition of Probability and laws.
  - 4.2. Assigning probabilities.
  - 4.3. Conditional probability. Independent events.
  - 4.4. Law of Total Probability and Bayes' Rules.
  
- UNIT 5: DISCRETE RANDOM VARIABLES AND IMPORTANT DISTRIBUTIONS.
  - 5.1. Discrete random variables.
  - 5.2. Probability distributions.
  - 5.3. Expected value and variance for discrete random variables.
  - 5.4. Binomial distribution.
  - 5.5. Hypergeometric distribution.
  - 5.6. Poisson distribution
  
- UNIT 6: CONTINUOUS RANDOM VARIABLE AND IMPORTANT DISTRIBUTIONS.
  - 6.1. Continuous random variables.
  - 6.2. Uniform distribution.
  - 6.3. Exponential distribution.
  - 6.4. Normal distribution.

#### **Methodology and activities**

- Lectures.
- Solving exercises
- Practical lessons with a statistical software.
- Case Studies.
- Group work.

#### **Teaching Innovation Activities**

- Case Studies: a poster session.
- Cooperative learning.
- Flipped classroom.
- Gamification.
- Self-paced learning.

## EVALUATION OF THE COMPETENCIES

### Criteria

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

1. A maximum of **seven points (70%)** can be obtained in the evaluation of one theoretical-practical test. In this exam we will measure the clarity in the concept understanding, the correct use of the statistical vocabulary and notation and the statistical reasoning skill as well as the correct interpretation of the numerical outcomes. A **MINIMUM MARK OF 3 POINTS** is required in this exam in order to pass the subject. (Evaluation of competencies: RD1, UAL1, UAL3, and FBC05).

2. A maximum of **three points (30%)** can be obtained in the evaluation of the activities proposed during the semester:

- 1.5 points can be obtained by group work. The members of the group have to search for a data set, analyse it using the methods explained in PART I and prepare a poster which will be defended in a poster session in front an evaluation committee. In case of absence in the defence of the poster, the student will lose the whole mark of the activity.
- 1 point can be obtained in the evaluation of several theoretical online tests that will be proposed during the semester. The final mark will be the proportion of total correct answers.
- 0.5 points can be obtained by handing in the worksheets used during the practical lesson. To get some mark in this part, the student must hand in at least 5 worksheets in time.

The marks of continuous assessment 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. (Evaluation of competencies: RD1, UAL1, UAL3, FBC05 and FBC12).

In addition to the mark got by the continuous assessment activities, extra marks can be awarded. Criteria for getting these extra marks will be detailed in the document “On-going evaluation criteria” available on Blackboard.

The final mark will be the sum of the written exam mark and the continuous assessment, as long as the student get the minimum mark of 3 points in the written exam. Otherwise, the final mark will be the mark got in the written exam.

**A minimum final mark of five points is required to pass the subject.**

### Follow up

- On-line platform sign up and access.
- Handing in activities in class.
- Handing in test through on-line platform.

## BIBLIOGRAPHY OF THE COURSE

### Recommended Reading

- Andrew F. Siegel. *Practical Business Statistics -6th edition*. Elsevier. 2012.
- Ken Black. *Business Statistics: For Contemporary Decision Making -8th edition*. John Wiley and Sons. 2011.

- Cheng F. Lee, John C. Lee y Alice C. Lee. *Statistics for business and financial economics*. Springer. 2013.

#### 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=63101103>

#### WEB ADDRESSES:

- <http://ec.europa.eu/eurostat> *Eurostat (European statistics)*
- [http://www.ecb.europa.eu/stats/html/index\\_en.html](http://www.ecb.europa.eu/stats/html/index_en.html) *(European Central Bank)*
- <http://www.imf.org/en/data> *(International Monetary Fund)*
- <http://data.worldbank.org/> *(The World Bank)*
- <http://www.oecd.org/> *(OECD)*
- <http://www.nber.org/data/> *(National Bureau of Economic Research)*
- [http://www.ine.es/en/inebmenu/indice\\_en.htm](http://www.ine.es/en/inebmenu/indice_en.htm) *(Spanish Statistical Office)*
- <http://www.bde.es/bde/en/areas/estadis/> *(Banco de España)*