

Academic Year: ( 2021 / 2022 )

Review date: 10-06-2021

Department assigned to the subject: Statistics Department

Coordinating teacher: ARRIBAS GIL, ANA

Type: Basic Core ECTS Credits : 6.0

Year : 1 Semester : 2

Branch of knowledge: Social Sciences and Law

**OBJECTIVES**

Specific competences:

1. Understand the basic concepts of population, sample, variable and statistic.
2. Know how to summarize a sample using measures of centre and variability.
3. Learn how to use statistical graphs to illustrate the main features of a sample.
4. Understand and implement the basic ideas of a regression analysis.
5. Learn how to estimate a population parameter based on sample data and how to formalize a hypothesis test.
6. Use of statistical software.

Transversal competences:

1. Capacity of analysis and synthesis.
2. Understanding of how to use computer packages.
3. Problem solving.
4. Teamwork.
5. Critical reasoning.
6. Verbal and written communication.

**DESCRIPTION OF CONTENTS: PROGRAMME**

1. Introduction.
  - 1.1. Concept and uses of statistics.
  - 1.2. Statistical terminology.
  - 1.3. Typos of variables.
2. Analysis of univariate data.
  - 2.1. Representations and plots of qualitative data.
  - 2.2. Representations and plots of quantitative data.
  - 2.3. Numerical summary of a sample of data.
3. Analysis of bivariate data.
  - 3.1. Representations and plots of qualitative and discrete data.
  - 3.2. Representations and numerical summaries of quantitative data: correlation and regression.
  - 3.3. Introduction to time series analysis.
4. Probability and probabilistic models.
  - 4.1. Random experiments, sample space, elementary and composite events.
  - 4.2. Properties of probability.
  - 4.3. Conditional probability and its properties.
  - 4.4. Random variables and their characteristics.
  - 4.5. Bernoulli trials and related distributions.
  - 4.6. The normal distribution.
  - 4.7. Other distributions
5. Introduction to statistical inference.
  - 5.1. Outline and objectives.
  - 5.2. Point estimators.
  - 5.3. Interval estimators.
  - 5.4. Fundamentals of hypothesis testing.

- 5.5. Tests for normal means.
- 5.6. Tests for proportions.
- 5.7. Testing for independence.

#### LEARNING ACTIVITIES AND METHODOLOGY

Theory: Theory classes with materials available on the web.

Prácticas: Problem classes. Computing classes using statistical software.

Group tutorials for resolution of problems, doubts etc.

#### ASSESSMENT SYSTEM

Continuous evaluation:

Two written tests counting 40% of the final grade.

Group project counting 10% of the final grade.

Continuous evaluation, exercises and practical classes, counting 10% of the final grade.

Final exam. End of course exam counting 40% of the final grade.

In the extraordinary exam, the student will sit a new written exam and will receive a grade equal to the maximum of the exam grade or a weighted average of the exam (40%) and coursework (60%) in the same way as the usual convocation.

|                                                                             |    |
|-----------------------------------------------------------------------------|----|
| <b>% end-of-term-examination:</b>                                           | 40 |
| <b>% of continuous assessment (assignments, laboratory, practicals...):</b> | 60 |

#### BASIC BIBLIOGRAPHY

- D. Huff How to Lie with Statistics, W.W. Norton & Company.
- G. Davis, B. Pecar Business Statistics using Excel, OUP, 2010

#### ADDITIONAL BIBLIOGRAPHY

- D. Rowntree Statistics without Tears, Penguin Books.
- G. Klass Just plain data analysis (2nd ed.), Rowman & Littlefield, 2012