

Academic Year: ( 2024 / 2025 )

Review date: 24-04-2024

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

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

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.

## BASIC BIBLIOGRAPHY

- D. Huff How to Lie with Statistics, W.W. Norton & Company.
- G. Davis, B. Pecar Business Statistics using Excel, OUP, 2010
- J. Utts and R. Heckard Mind on Statistics, 6th Edition, Cengage Learning, 2022

## ADDITIONAL BIBLIOGRAPHY

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