Universidad Zaragoza

Academic Year/course: 2024/25

27510 - Statistics II

Syllabus Information

Academic year: 2024/25
Subject: 27510 - Statistics II
Faculty / School: 109 - Facultad de Economía y Empresa
Degree: 449 - Degree in Finance and Accounting
ECTS: 6.0
Year: 2
Semester: First semester
Subject type: Compulsory
Module:

1. General information

The main goal of this subejct is that the student has the ability to apply and interpret the basic statistical tools for the understanding and management of random phenomena related to the economic field.

It also provides the basic statistical methods and techniques for extracting information from a set of data to make decisions, using inferential tools such as estimation and hypothesis testing. The main objective is for students to have the skills and abilities to obtain the most relevant conclusions and provide the interpretations necessary to understand the economic phenomenon they are analysing.

They will have a preferably practical profile so that the student can analyze, solve and interpret economic realities with the objective ofmaking decisions with scientific rigor.

2. Learning results

The student, in order to pass this subject, must demonstrate the following results:

1. To deepen the knowledge of the fundamentals, concepts and statistical methods for the analysis of economic realities.

2. Understand and use probability as a measure of uncertainty in economic phenomena.

3. Employ and plan sampling methods to extract information from an economic phenomenon.

4. To know and apply inferential statistical techniques in order to make decisions with scientific rigor.

5. Obtain, with the support of ICT, the statistical results necessary to estimate or contrast statements about the data analyzed, measuring the guarantees of the decisions taken.

6. Infer and corroborate properties of theoretical models from sample observations and justify the goodness of them.

3. Syllabus

BLOCK 1. CALCULATION OF PROBABILITIES

Unit 1: Discrete random variable

Concept of random variable. Classification into discrete and continuous random variables. Probability distribution of a discrete v.a. and its characteristics. Notable Distributions.

Unit 2: Continuous random variable

Probability distribution of a continuous a.v. and its characteristics. Notable distributions

BLOCK 2. INTRODUCTION TO SAMPLE THEORY

Unit 3: Introduction to Sample Theory

Basic concepts. Random sampling with and without replacement. Sampling distribution of a statistic. Determination of the sample size.

BLOCK 3. INFERENTIAL METHODS

Unit 4: Point and interval estimation

Concept of estimator. Point estimate. Interval estimation: pivotal method, Notable confidence intervals for the mean, variance and proportion.

Unit 5: Hypothesis testing

Basic concepts: hypothesis, significance level and power. Notable parametric contrasts. Nonparametric contrasts: normality contrasts.

BLOCK 4. TWO-DIMENSIONAL ANALYSIS

Unit 6: Two-dimensional inference

Analysis of two populations. Independent and paired samples. Statistical inference to compare means, proportions and

variances. Analysis of categorical variables: Contingency tables.

4. Academic activities

Master classes: 30 hours

Practical classes: 30 hours

Personal Study: 85 hours

Assessment tests. 5 hours

6 ECTS = 150 hours

Lectures will be used to develop the concepts and techniques of each topic, using expository techniques, but encouraging participation and class discussion with students. Practical classes will be used to show the student how to approach and solve problems both in the classroom and in computer rooms using specific software.

In principle, the teaching methodology and its evaluation is planned to be based on face-to-face classes . However, if circumstances so require, they may be carried out online.

5. Assessment system

The subject will be evaluated globally in both calls, based on three different tests: one theoretical-practical (T), a practical one on computer (P) and another one called continuous monitoring questions during the course (S).

The continuous follow-up questions (S) consist of the resolution of practical questions that will be proposed in the last ten or fifteen minutes of class at the end of a block or topic. The number of questions will range from 6 to 10. To pass these questions the student must present at least 80% of the proposals and the average of the 80% best marks obtainedwill be calculated , being necessary to obtain at least three points out of ten.

The computer-based practical test (P) consists of solving problems and cases with databases using the package used in the practical classes. The student who has passed the continuous monitoring questions may take this test in the last days of class. To pass this practical test, the student must have at least three points out of ten. Otherwise, it will have to be carried out on the date of the official call for applications.

The theoretical-practical test (T) will be held on the official date of the call and consists of the resolution of problems and questions.

In the first call:

1. Students who only take the theoretical-practical test (T)

Those who have passed the continuous monitoring questions (S) and the practical test (P). The rating is calculated as follows: Final_note= max{0.20·S+0.20·P+0.60·T, 0.40·P+0.60·T }. To pass the subject they must have at least three points out of ten in each of the three tests and the final grade must be equal to or higher than five points out of ten.

2. Students taking both tests (P) and (T)

Those who want to improve their practical test (P) grade or who have not passed the follow-up questions continuous (S) or the practical test (P). The grade for the subject is obtained as Final_grade=0.40·P+0.60·T. To pass , students must have at least three points out of ten in each of the two tests (P) and (T) and the final_grade must be equal or higher than five points out of ten.

On the second call:

The student must be present and take the two tests P and T on the date of the second call. The rating-end-will be calculated in the same way as in the first call, that is to say,

Final_grade=max{0.20·S+0.20·P+0.60·T, 0.40·P+0.60·T } if the student has participated and passed the questions of continuous monitoring during the course. Otherwise, Final_grade=0.40·P+0.60·T. To pass the course the student must obtain at least 3 points out of 10 in each of the tests (P) and (T) and a final_grade equal or higher than five points out of ten.

Assessment Criteria:

In the three types of tests (S), (P) and (T) the approach, development, results and interpretation of the solutions to the proposed problems or real situation analyzed will be evaluated.

6. Sustainable Development Goals

4 - Quality Education
5 - Gender Equality
8 - Decent Work and Economic Growth