

Academic Year: ( 2023 / 2024 )

Review date: 26-04-2023

Department assigned to the subject: Statistics Department

Coordinating teacher: AUSIN OLIVERA, MARIA CONCEPCION

Type: Basic Core ECTS Credits : 6.0

Year : 1 Semester : 1

Branch of knowledge: Social Sciences and Law

## REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

The curriculum provides no prerequisite for courses. However, it is recommended that the student knows the basic properties of real numbers, inequalities and drive that familiar with elementary functions, derivatives and integrals to high school level.

## OBJECTIVES

The aim of this course is that students learn how to organize, represent, analyze and summarize the information contained in a dataset by the use of the appropriate graphical, tabular and numerical methods according to the type of data and variables observed.

### SPECIFIC COMPETENCES

1. Distinguish different types of variables and data.
2. Synthesize tabular, numeric and graphical statistical information.
3. Propose and validate the simple linear regression model as a model for the relationship between two continuous variables.

### TRANSVERSAL COMPETENCES:

1. Capacity of analysis and synthesis of information.
2. Setting up and solving practical problems.
3. Written and verbal communication.

## DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction
  - 1.1. What is Statistics. Definition.
  - 1.2. General concepts.
  - 1.3. Sample methods.
2. Descriptive statistics for a single variable.
  - 2.1 Frequency distribution. Grouping by classes.
  - 2.2. Frequency distribution. Grouping by class intervals.
  - 2.3. Graphical displays.
  - 2.4. Numerical measures for a univariate distribution.
3. Transformations.
  - 3.1. Linear transformations.
  - 3.2. Non linear transformations.
4. Joint description of various variables.
  - 4.1. Two-way tables. Joint frequency distribution.
  - 4.2. Graphical displays.
  - 4.3. Marginal frequency distributions. Conditional frequency distributions.
  - 4.4. Numerical measures for linear association. Pearson's correlation coefficient.
  - 4.5. Spearman's correlation coefficient.
  - 4.6. Association measures for contingency tables.
5. Relations between variables.
  - 5.1. Simple linear regression. The least squares method.

## LEARNING ACTIVITIES AND METHODOLOGY

Theory (2 ECTS). Lectures with available material posted in internet. Problems (4 ECTS) Problem Solving classes. Computational exercises. Weekly office hours to assist students on an individual and group basis.

## ASSESSMENT SYSTEM

Presentation of the draft of a project of an exploratory data analysis of a real data set (40%). Final project, R code and preprocessed data set (60%)

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

## BASIC BIBLIOGRAPHY

- A. Agresti Categorical Data Analysis, Wiley, 2002
- J. Tukey Exploratory Data Analysis, Addison-Wesley, 1977