

Academic Year: ( 2022 / 2023 )

Review date: 27-04-2017

Department assigned to the subject: Department of Statistics

Coordinating teacher:

Type: Compulsory ECTS Credits : 6.0

Year : 3 Semester : 1

## OBJECTIVES

- To analyze univariate and bivariate data
- To solve probability problems
- To use random variables
- To demonstrate an understanding of basic concepts and techniques in estimation
- To be able to solve problems in estimation
- To be able to solve problems using a statistical software.

## DESCRIPTION OF CONTENTS: PROGRAMME

### PROGRAMME

1. Introduction.
  - 1.1. Concepts and use of Statistics.
  - 1.2. Statistical terms: populations, subpopulations, individuals and samples.
  - 1.3. Types of variables.
2. Analysis of univariate data.
  - 2.1. Representations and graphics of qualitative variables.
  - 2.2. Representations and graphics of quantitative variables.
  - 2.3. Numerical summaries.
3. Analysis of bivariate data.
  - 3.1. Representations and graphics of qualitative and discrete data.
  - 3.2. Representations and numerical summaries of quantitative data: covariance and correlation.
4. Probability and probabilistic models.
  - 4.1. Random experiments, sample space, elemental and composite events.
  - 4.2. Properties of Probability. Conditional Probability and its properties.
  - 4.3. Random variables and their characteristics.
  - 4.4. Discrete probability models: Bernoulli variables and related distributions.
  - 4.5. Continuous probability models: The normal distribution and related distributions.
  - 4.6. Introduction to the bivariate normal distribution.
5. Introduction to Statistical Inference.
  - 5.1. Parameter point estimation.
  - 5.2. Goodness-of-fit to a probability distribution. Graphical methods.
  - 5.3. The sample mean distribution.
  - 5.4. Confidence interval for the mean.

## LEARNING ACTIVITIES AND METHODOLOGY

14 Theoretical support materials available on the Web, and 14 sessions based on problem-solving sessions and practical computing. No group tutorials except during the last week.

## ASSESSMENT SYSTEM

60% of the final grade will be achieved by a final examination for assessing the knowledge acquired. A minimum of 4 points (out of 10) is required in the final exam. The remaining 40% is obtained by two midterm exams (15%+20%) and the compulsory tasks assigned in the computational labs (5%). Theoretical questions as well as queries on computational laboratories can be asked in the exams.

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