Applied Statistics

Academic Year: (2019 / 2020)   **Review date: 27-04-2017**

Department assigned to the subject: Statistics Department

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.

% end-of-term-examination: 60

% of continuous assessment (assigments, laboratory, practicals…): 40