

APPLIED STATISTICS

Degree in Public Management

Code: 10204

Main Scientific Area: Statistic

Lecturer: Sara Maria Alves da Cruz

Language of Instruction: Portuguese

Regime: S2

Contact Hours: 60h Total Workload: 94h

ECTS: 5,5

Objectives

This course aims to introduce students to a set of tools that they can serve as decision support in their professional activities. It is intended to provide students with the domain of some of the principal techniques and methodologies of exploration and data processing, as well as a set of concepts and methods in the context of probability theory, with particular focus on topics needed to understand the methods of inference statistics. It is important that the study of statistics improves the ability to critically evaluate the huge amount of statistical information that surrounds us today.

Learning Outcomes

Identify and analyze a problem, solving it by selecting and applying appropriate statistical methods and models in order to obtain conclusions that assist decision making at various levels under uncertainty. To interpret the results and look at them critically. Know a set of tools for exploratory data analysis and descriptive statistics. To apply the concepts of Probabilities in evaluating situations of uncertainty. Identify Models Theoretical study in real situations.

Course Contents

Chapter I - Univariate Descriptive Statistics

Concepts and objectives. Population and sample. Variable types.

Data presentation. Frequency distribution of discrete and continuous variables. Observed and accumulated frequencies.

Graphical representation. Differential and integral Diagram. Histogram.

Measures: location, dispersion, skewness and flatness.

Chapter II - Descriptive Statistics Bivariate

Statistical tables of the double entry.

Distributions: Joint, marginal and conditional.

Distributions graphical representation. Correlation. Covariance. Independence.

Chapter III - Theory of Probability

Random Experience. Interpretations of the concept of probability.

Conditional probabilities. Theorem of total probability and Bayes' theorem. Independent events.

Chapter IV - Random Variables

Discrete and continuous random variables. Mean and variance.

Chapter V - Some important theoretical distributions

Discrete: Bernoulli distribution. Binomial Distribution.

Continuous: Uniform distribution. Normal or Gaussian distribution. Central limit theorem.

Recommended Bibliography

B. Murteira; C. Ribeiro et al: Introdução à Estatística, McGraw-Hill, 5ª Ed., 2007.

D. Pestana, S. Velosa: "Introdução à Probabilidade e à Estatística", Vol. I, 4ª Ed., Fundação Calouste Gulbenkian.

E. Reis, P. Melo, R. Andrade, T. Calapez: Estatística Aplicada , Vol. 1 e 2, 4ª Ed, Edições Sílabo, 2001.

J.E. Freund, G.A. Simon: Estatística Aplicada à Economia, Administração e Contabilidade. Bookman, Porto Alegre, 2000.

L.J. Kazmier : Estatística Aplicada à Economia e Administração, McGraw-Hill, São Paulo, 1982.

R. Guimarães, J. Sarsfield Cabral: Estatística, 2º Ed., McGraw-Hill, 2007.

Apontamentos fornecidos pela docente.

Learning and Teaching Methods

Set of tools that can support decisions in professional activities - Chapters I and II.

Mastery of some of the main techniques and methodologies of data exploration and treatment - Chapter III.

Concepts and methods in the field of probability theory, with a special focus on base points to understand the methods of statistical inference - Chapters III, IV and V.

Assessment Methods

Public Management - Presencial System

Assessment Components:

Continuous Assessment

The assessment of students will be continuous and operationalized through the following compulsory elements of:

1. two partial tests (TP1 and TP2);
2. a group work (TG), not being possible to improve this component of assessment in any of the Examination

Seasons.

The final mark (FN) will be given by

$$NF=15\%TG+40\%T1+45\%T2$$

Note: The minimum grade in the second test is 7 values.

The final mark of the curricular unit is expressed in 0 to 20 values, rounded to the nearest unit.

Assessment by Examination

The final mark of the exam (NF) can be as follows, with the best mark prevailing (NF or NE=note examination)

$$NF=15\%TG+85\%NE \text{ or } NF=NE$$

The final grade is expressed from 0 to 20 points, rounded to the nearest unit. A student who has not undergone any of the two components of assessment (Group work or Test) may be assessed by Examination, which has a weighting of 100% of the student's final grade.

Public - Distance Learning Regime

Assessment Components:

Continuous Assessment

The assessment of students will be continuous and operationalized through the following compulsory elements of assessment:

1. Written test with a weighting of 75%. Minimum grade in the test = 7.
2. Group work with a weighting of 15%, not being possible to improve this component of assessment in any of the Examination Seasons.
3. Class question with a weighting of 10%.

The final classification of the curricular unit is expressed from 0 to 20 points, rounded to the nearest unit.

Assessment by Examination

The final mark of the exam (NF) can be as follows, prevailing the best mark (NF or NE=note examination)

$$NF=15\%TG+85\%NE \text{ or } NF=NE$$

The final grade is expressed from 0 to 20 points, rounded to the nearest unit. A student who has not undergone any of the three components of assessment (class question, group work or test) may be assessed by Examination, which has a weighting of 100% in the student's final grade.