

## Course Unit: 196114 – Statistics and Data Analysis

Year 2 Semester 1 ISCED Code: 0542 ECTS: 5

Type of Course Unit Compulsory Delivery Mode: Face-to-face / Distance Learning Language of Instruction: Portuguese

COURSE COORDINATOR: Ana Isabel Guerra Cantarinha

### HOURS OF WORK

TOTAL HOURS	Contact Hours								Hours in autonomous work
	Theory	Theory and practice	Practical and laboratory work	Field work	Seminar	Internship	Tutorial guidance	Other	
125		35							90

Prerequisites (if applicable): Not applicable

### LEARNING OUTCOMES (knowledge, skills and competence)

This curricular unit aims to introduce students to parametric and non-parametric statistics and multiple linear regression models. The linear regression model for panel data is also included.

Intended outcomes are:

- Understand the fundamental principals of inferencial statistics;
- Understand the difference between parametric and non-parametric statistics and its applications;
- Understand and apply linear regression models;
- Articulate the tests and models studied using the SPSS statistical software.

### CONTENTS

This course addresses issues related to the acquisition of knowledge of the following areas:

Introduction to parametric and non-parametric statistics:

- Parametric tests for means: Student's T and one -way analysis of variance (ANOVA);
- Non-parametric tests: Mann-Whitney and Kruskal-Wallis;
- Pearson's and Spearman's correlations.

Regression models:

- Multiple linear regression;
- Logistic regression.

### DEMONSTRATION OF THE CONTENTS COHERENCE WITH THE COURSE UNIT'S LEARNING OUTCOMES

The main propose of this curricular unit is to provide the key concepts to be used by the students in their master theses. The goal is achieved through the introduction of parametric and non-parametric statistics as well as two basic regression models: linear and logistic.

## TEACHING METHODOLOGIES

Lectures, including:

- Theoretical explanation of the contents of the syllabus and discussions with students;
- Analysis of case studies and practical exercises using statistical software.

From 2023/2024 onwards, the UC operates on a blended learning basis with 1/3 of the hours in online sessions. In these sections, active learning strategies will be used, with student-centered learning and activities that encourage their participation.

## DEMONSTRATION OF THE COHERENCE BETWEEN THE TEACHING METHODOLOGIES AND THE LEARNING OUTCOMES

In accordance with the objectives outlined in the curricular unit of "Statistics and Data Analysis", the learning model through case studies allows the students to develop the necessary skills.

## EVALUATION METHODS

The assessment is done by a final exam.

## MAIN BIBLIOGRAPHY

- Siegel, Sidney, Castellan, N. John. (1988). Nonparametric statistics for the behavioral sciences (2nd Ed.). New York: McGraw Hill Book Co.
- Higgins, J. (2003). Introduction to Modern Nonparametric Statistics. Duxbury.
- Stock, James H. & Watson, Mark W, (2015). Introduction to Econometrics. Pearson Education (3rd edition)
- Wooldridge J.M. (2019) - Introductory Econometrics: A Modern Approach, South Western Publishers (7th edition).
- Maroco, João (2021) – Análise estatística com o SPSS Statistics, Lisboa. ReportNumber (8ª Edição).
- Lisboa, João, Augusto, Mário, Ferreira, Pedro (2012) - Estatística Aplicada à Gestão. Vida Económica.
- Pestana, Maria H. & Gageiro, J. Nunes (2014) – Análise de Dados para Ciências Sociais. A Complementaridade do SPSS (6ª edição).
- Pestana, Maria H. et al (2005) – Descobrimo a regressão – com a complementaridade do SPSS, Lisboa. Edições Sílabo.

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