

Course Unit: 935013 - Statistics and experimental design

Year 1 Semester 2 ISCED Code: 542 ECTS: 3.5

Type of Course Unit: Compulsory **Delivery Mode:** Face-to-face **Language of Instruction:** Portuguese

COURSE COORDINATOR: Ana Maria Caeiro Lebre

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	
87.5		45							42.5

Prerequisites (if applicable): Not applicable

LEARNING OUTCOMES (knowledge, skills and competence)

Understand probability and statistical fundamentals. Have the ability to explore, analyze, interpret and present a conducted data. Statistical inference usage and comprehension. Comprehend and apply experimental designs data analysis.

CONTENTS

Descriptive statistics: frequencies distributions; central tendency measures, dispersion, asymmetry and kurtosis; sample and population concepts. Probability concept, random variable parameters. Theoretical distributions: normal, qui-square, t e F. Confidence intervals, hypothesis tests. Analysis of variance: one way, two way, blocs and latin squares. Simple regression analysis, correlation.

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

This unit has three main proposes. The first one (have the ability to explore, analyze, interpret and present a conducted data) is achieved throughout descriptive statistics appliance. The second (Statistical inference usage and comprehension) is achieved by computing confidence intervals and hypothesis tests as well as simple linear regression. The last main propose (comprehend and apply experimental designs data analysis) is achieved throughout the analysis of practical experiments.

TEACHING METHODOLOGIES

Usage of expositive and interactive methods combined with informatics; Practical exercises are made in classroom as well as computing experimental data.

Evaluation made by exam..

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

All proposes of this unit are evaluated by a task or a paperwork. Aside this practical component, each of those same proposes are supported by theoretical fundaments as well as classroom exercises.

EVALUATION METHODS

Evaluation by exam normal season and evaluation by means of examination.

MAIN BIBLIOGRAPHY

Theoretical and Practices That leaves are on the Moodle .

- Ross, Sheldon M. (2004) Introduction to probability and statistics for Engineers and Scientists. Elsevier / Academic Press.
- Montgomery, D. C. (2009) Design and analysis of experiments. John Wiley & Sons. New York.
- Murteira, B., Ribeiro, C.S., Silva, J.A. e Pimenta C. (2007). Introdução à Estatística. Mc Graw Hill.
- Robalo, A. (1995). Estatística - Exercícios, Volumes 1 e 2, Edições Sílabo.
- Spiegel, M. R., Schiller, J. e Alu Srinivasan, R. (2000). Probabilidades e estatística. McGraw-Hill.
- Cochran, W.G. e Cox, G.M. (1957) Experimental Designs. Second edition. John Wiley and Sons, USA.

Year of implementation: 2013/2014 | Date of approval by the Technical-Scientific Board: 2012-10-10