



UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Statistics

Academic Year 2023/2024

1. Organic Unit

Faculty of Business and Economic Sciences

2. Course

ECONOMICS

3. Cycle

1st

4. Course Unit

Statistics (03311)

5. Scientific Area

6. Curricular Year

2nd

7. Type of Curricular Unit / Semester

1st Semester



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8. Class type and workload (work time)

Theoretical classes:

Practical classes:

Theoretical-Practical Classes 30,00

Tutorial Guidance: 20,00

9. ECTS Credits

6,00

10. Scientific Area Coordinator

11. Regent

Prof. Doutor FERNANDO MANUEL MONTEIRO MARTINS

12. Assistants

13. Teaching Language

Portuguese

14. General Objectives

Apply statistical analysis techniques in solving concrete problems in the fields of Economics and Management.

Present the basic methods of statistical analysis, focusing on the close connection between sample and population.

15. Specific Objectives

Understand the importance of Statistics as a science that allows comparing sample data with theory (sets of abstract hypotheses about population parameters). Probability Theory, the branch of Mathematics that allows describing and understanding random experiences, is the indispensable tool for measuring and controlling the uncertainties inherent in statistical reasoning. Inferential analysis presents a set of techniques that allow extrapolating the sample results to the population.

16. Skills to be acquired

Teaching is centered on solving applications, that is, on developing problem-solving skills in economic and social sciences through a systematic resolution methodology. It is essential that students can reach a good level of understanding of statistical methods and the respective ability to apply them in concrete problems in the fields of Economics or Management.



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17. Teaching Methodology

The teaching of this curricular unit will be based on three concrete methodologies:

Lectures of an expository nature, for the presentation of the theoretical elements of reference.

Participatory classes, with analysis and resolution of practical exercises, which can take place at the same time as the lectures.

Self-study related to the student's autonomous work, as included in the lesson planning (see syllabus). If possible, R will be used.

18. Course Unit Program

1. PROBABILITY THEORY.

- 1.1. Concepts, algebra of events, axioms.
- 1.2. Conditional odds. Independence of events.
- 1.3. Total Probability Theorem and Bayes' Theorem.

2. RANDOM VARIABLES.

- 2.1. Concept.
- 2.2. One-dimensional VA probability and distribution functions.
- 2.3. Two-dimensional VA probability and distribution functions.
- 2.4. Parameters.

3. DISTRIBUTIONS OF DISCRETE AND CONTINUOUS RANDOM VARIABLES.

- 3.1. Uniform distribution.
- 3.2. Bernoulli distribution.
- 3.3. Binomial Distribution.
- 3.4. Poisson distribution;
- 3.5. Normal Distribution.

4. SAMPLING DISTRIBUTIONS.

- 4.1. Normal Distribution, Chi-Square, t-Student and F-Snedecor.
- 4.2. Sampling distributions of the most important statistics: Bernoulli populations and Normal populations.

5. INTRODUCTION TO STATISTICAL INFERENCE.

- 5.1. Point estimation.
- 5.2. Interval estimation: core variable method.

6. HYPOTHESES TESTS.

- 6.1. Formulation of hypotheses.
- 6.2. Errors and probabilities.
- 6.3. Power function.
- 6.4. Parametric hypothesis tests.

19. Assessment Methods



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Access to continuous evaluation depends on attending at least 70% of the classes taught (applies to both TP and OT classes). The process consists of carrying out two mandatory interim tests, with a weighting of 50% each.

20. Didactic Resources

Rooms equipped with computers with internet access, and with statistical software (R or SPSS), available for students who wish to further develop their knowledge of the subject.

21. Sustainability Objectives

- 1 - Ensure equal access to quality technical, professional and cultural education.
- 2 - Substantially increase the number of young people and adults with relevant qualifications, including technical and professional skills, for employment, decent work and entrepreneurship.
- 3 - Guarantee equal opportunities in university education, including for people in vulnerable situations.
- 4 - Understand to what extent Statistics can be an important means of assessing the impact of climate change.

22. Keywords

Probabilities
Random variable
Probability distributions
Sample
Estimation
Inference tests



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23. Main Bibliography

Author(s): Murteira, B., C.S. Ribeiro, J. Andrade e Silva, C. Pimenta & F. Pimenta
Title: Introdução à Estatística
Edition: 3^a Year: 2015
Local: Lisboa
Publisher: Escolar Editora

Author(s): Reis, E., P. Melo, R. Andrade & T. Calapez
Title: Estatística Aplicada (Vol. 1)
Edition: 6^a Year: 2015
Local: Lisboa
Publisher: Sílabo

Author(s): Reis, E., P. Melo, R. Andrade & T. Calapez
Title: Estatística Aplicada (Vol. 2)
Edition: 5^a Year: 2016
Local: Lisboa
Publisher: Sílabo

24. Complementary Bibliography

Author(s): Afonso, A. & Nunes, C.
Title: Probabilidades e Estatística - Aplicações e Soluções em SPSS
Edition: Year: 2019
Local:
Publisher: Universidade de Évora

Author(s): Nunes, C. F.
Title: Probabilidades e Estatística - 275 problemas resolvidos (utilização do R)
Edition: Year: 2012
Local: Lisboa
Publisher: Escolar Editora



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Ficha técnica MIP / MIP Datasheet	
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