



UNIVERSIDADE LUSÍADA  
LISBOA

Course Unit Program  
Statistics

Academic Year 2024/2025

**1. Organic Unit**

Faculty of Business and Economic Sciences

**2. Course**

Marketing

**3. Cycle**

1st

**4. Course Unit**

Statistics (V1016)

**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. Doutora CRISTINA MARIA FERNANDES NUNES

#### 12. Assistants

#### 13. Teaching Language

Portuguese

#### 14. General Objectives

Apply statistical analysis techniques in solving specific problems in the fields of Marketing and Management.

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

#### 15. Specific Objectives

Statistics is the 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.

#### 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 to concrete problems in the fields of marketing or management.

#### 17. Teaching Methodology



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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, SPSS 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

Access to continuous assessment 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.



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## 20. Didactic Resources

There are 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

Reduction of the ecological footprint, using digital resources, available online at Moodle.

## 22. Keywords

Probability  
random variable  
Probability distributions  
Sample  
Parameter estimation  
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<sup>a</sup> Year: 2015  
Local: Lisboa  
Publisher: Escolar Editora

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

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

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### 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

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Author(s): Nunes, C.  
Title: Probabilidades e Estatística  
Edition: 1<sup>a</sup> Year: 2022  
Local: Lisboa  
Publisher: Escolar Editora

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| Ficha técnica MIP / MIP Datasheet |                                                               |
|-----------------------------------|---------------------------------------------------------------|
| Título / Title                    | Course Unit Program 'ESTATÍSTICA':<br>Academic Year 2024/2025 |
| Autor / Author                    | Prof. Doutora CRISTINA MARIA FERNANDES<br>NUNES               |
| Classificação / Classification    | -                                                             |
| Descritores / Descriptors         | -                                                             |
| Colaborador(es) / Colaborator(s)  | -                                                             |
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