UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Statistics

Academic Year 2023/2024

## 1. Organic Unit

Institute of Psychology and Educational Sciences

## 2. Course

PSYCHOLOGY

## 3. Cycle

1st

## 4. Course Unit

Statistics (20309)

## 5. Scientific Area

## 6. Curricular Year

1st

## 7. Type of Curricular Unit / Semester

2nd 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 MIGUEL DA COSTA NUNES DE FREITAS

## 12. Assistants

## 13. Teaching Language

Portuguese

## 14. General Objectives

This module aims to develop the necessary knowledge and skills for students to become critical consumers of research. The
module is designed to help students developing skills in how to design and implement a research study, how to measure human
behaviour, and how to analyze and interpret data.
Throughout the semester, students will focus on research that involves examining differences between groups, namely in experimental studies.

## 15. Specific Objectives

Critically read psychological research (its design, analysis, and interpretation) which focuses on comparing differences between groups.
Select and use techniques to analyze, report, and conclude from quantitative data, including inferential tests of correlation and association.
Understand how to measure and analyze behaviour, and understand strengths and limitations of different research methodologies.
Write the Method and Results sections of a study.

## 16. Skills to be acquired



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Foster a positive attitude towards science
Understand the fundamentals of research in psychology
Analyze research by identifying the variables involved
Distinguish data analysis strategies according to the nature of psychological phenomena
Develop problem solving skills in data analysis in behavioural sciences
Decode a scientific paper, according to the steps of the scientific method

## 17. Teaching Methodology

Classes are theoretical and practical, using the expository, interrogative and active method, with discussion of the themes and
their practical implications, as well as the realization of practical exercises for application of knowledge. We will use
pedagogical techniques that value peer collaboration and learning by guided discovery, by exploring statistical analysis
software. Autonomy and critical thinking will be encouraged.

## 18. Course Unit Program



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1 Introduction to research designs and statistical data:
1.1 Data and statistics in Psychology
1.2 Measurement and research designs in Psychology

2. Describing and Synthesizing Data
2.1 Measurement and Distribution
2.2 Central Tendency
2.3 Variability in scores

3. Standardised values and the normal distribution
3.1 z-scores
3.2 Normal distribution

4. Examining means and mean differences
4.1 Confidence intervals for the mean
4.2 Examining differences of means in experimental studies

5. Experimental designs
5.1 Manipulation and control
5.2 Between and within-subjects experiments
5.3 Internal validity and interference variables

6. Between-group differences 1: One-sample and paired samples t-test
6.1 Inferential statistics
6.1.1 Testing the null hypothesis
6.1.2 Statistical inference and statistical significance
6.1.3 p-value
6.2 t-test for one sample
6.3 t-test for paired samples

7. Between-Group Differences 2: t-test for independent samples
7.1 T-test for independent samples
7.2 How to report mean differences

8. Alternatives to t-test
8.1 z-test for one sample
8.2 Nonparametric tests
8.3 Confidence intervals for differences of means

9. Non-experimental and quasi-experimental designs
9.1 Comparing the different designs that analyze mean differences
9.2 Decoding and analysing empirical articles
9.3 Understanding the Method and Results sections



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## 19. Assessment Methods

According to the Regulamento Geral de Avaliação da Universidade Lusíada, students must sit:
A) Two written tests (60%)
B) Final written Exam (40%)

## 20. Didactic Resources

1. Powerpoints, databases and scientific articles
2. Computers and IBM SPSS software
3. Recommended readings

## 21. Sustainability Objectives

Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Target 4.4: By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

Target 4.7: By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development.

## 22. Keywords

Inferential Statistics
Hypothesis testing
Comparison of groups; experimental designs



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## 23. Main Bibliography


| | | | |
|---|---|---|---|
| Author(s): | Gravetter, F.J. & Forzano, L-A. B. | | |
| Title: | Research methods for the behavioral sciences | | |
| Edition: | 6ª | Year: | 2019 |
| Local: | Boston | | |
| Publisher: | Cengage Learning | | |

| | | | |
|---|---|---|---|
| Author(s): | Howell, David C. | | |
| Title: | Fundamental Statistics for the Behavioral Sciences | | |
| Edition: | 9ª | Year: | 2017 |
| Local: | Boston | | |
| Publisher: | Cengage Learning | | |

| | | | |
|---|---|---|---|
| Author(s): | Maroco, João | | |
| Title: | Análise Estatística com o SPSS Statistics | | |
| Edition: | 6ª | Year: | 2014 |
| Local: | Lisboa | | |
| Publisher: | Report Number | | |


## 24. Complementary Bibliography


| | | | |
|---|---|---|---|
| Author(s): | Dancey, Christina | | |
| Title: | Estatística sem matemática para Psicologia | | |
| Edition: | 7ª | Year: | 2018 |
| Local: | Porto Alegre | | |
| Publisher: | Penso | | |

| | | | |
|---|---|---|---|
| Author(s): | Martinez, L., & Ferreira, A. | | |
| Title: | Análise de Dados com SPSS, Primeiros Passos | | |
| Edition: | 3ª | Year: | 2010 |
| Local: | Lisboa | | |
| Publisher: | Escolar Editora | | |




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| Ficha técnica MIP / MIP Datasheet | |
|---|---|
| Título / Title | Course Unit Program 'ESTATÍSTICA': Academic Year 2023/2024 |
| Autor / Author | Prof. Doutor MIGUEL DA COSTA NUNES DE FREITAS |
| Classificação / Classification | - |
| Descritores / Descriptors | - |
| Colaborador(es) / Colaborator(s) | - |
| Data Hora / Date Time | |
| Formato de dados / Data Format | Texto / Text, PDF |
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