UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Data Analysis

Academic Year 2023/2024

1. Organic Unit

Faculty of Business and Economic Sciences

2. Course

Business Management

3. Cycle

1st

4. Course Unit

Data Analysis (24105)

5. Scientific Area

6. Curricular Year

1st

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 NUNO MIGUEL SIMÕES VENES

12. Assistants

13. Teaching Language

Portuguese

14. General Objectives

To introduce students to the methods of applied economic analysis.
To introduce the concepts of descriptive statistics.
To introduce students to the techniques of investigation and information processing.

15. Specific Objectives

Knowledge of the fundamental characteristics of economic and business variables.
Knowledge of the fundamental characteristics of economic and business information of a quantitative nature.
Acquisition of methods of exploratory analysis of statistical data that synthesize information.
Knowledge of the most relevant sources of information for the accomplishment of empirical works.

16. Skills to be acquired

The teaching is focused on the resolution of applications, that is, on the development of problem-solving capabilities of data analysis in economic and business sciences, through a systematic methodology of resolution: How to present the problem in quantitative terms? What are the useful concepts? Are the validity conditions verified? How to manipulate the concepts? What is the answer to the problem? The course is based on a good understanding of the methods and training of the conditions of app

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17. Teaching Methodology

Theoretical-practical classes (the teacher introduces the concepts through an application and deduces the abstract aspects); tutorial classes (the teacher presents the applications to the students and with their active participation a solution is sought).

18. Course Unit Program

CHAPTER 1 - RATES OF CHANGE AND INDEX NUMBERS.
1.1. Rates of variation.
1.2. Simple index numbers.
1.3. Aggregate or composite index numbers.
1.4. Nominal and real variables and price indices.

CHAPTER 2 - DESCRIPTIVE STATISTICS. EXPLORATORY DATA ANALYSIS.
2.1. Qualitative and quantitative data. Discrete and continuous variables.
2.2. Tabulation and graphical representation of data.
2.2.1. Tabular and graphical representation of qualitative data: frequency table, bar diagram, circular diagram.
2.2.2. Tabular and graphical representation of discrete quantitative data: frequency table, dot plots, bar diagram, cumulative frequency function.
2.2.3. Tabular and graphical representation of continuous quantitative data: frequency table, histogram, frequency polygon.
2.3. Location and dispersion measures.
2.3.1. Location measures: arithmetic mean, weighted mean, geometric mean and harmonic mean. Fashion. Properties.
2.3.2. Measures of dispersion: amplitude, mean absolute deviation, variance, standard deviation and coefficient of variation. Properties.
2.4. Data sorting. Stem-and-leaf diagram.
2.5. Median. Quartile, decile, percentile, quantile.
2.6. Form parameters. Asymmetry and flattening coefficients.
2.7. Diagram of extremes and quartiles. Comparison of samples. Outliers.
2.8. Concentration measures. Gini index and Lorenz curve.

CHAPTER 3 - CORRELATION AND REGRESSION.
3.1. Scatterplots.
3.2. Covariance.
3.3. Standardisation of a sample.
3.4. Linear correlation coefficient.
3.5. Simple linear regression.

19. Assessment Methods

Realization of works throughout the semester.
Realization of two evaluation tests.

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20. Didactic Resources

Notes and exercises available on Moodle.

21. Sustainability Objectives

SDG 4, SDG 8.

22. Keywords

Sample
Population
Average
Variance
Correlation
Regression
Index numbers

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23. Main Bibliography

Author(s):	ST. AUBYN, A. e VENES, N.		
Title:	ANÁLISE DE DADOS - APLICAÇÕES ÀS CIÊNCIAS ECONÓMICAS E EMPRESARIAIS		
Edition:	1ª	Year:	2011
Local:	Lisboa		
Publisher:	Verlag Dashöfer		

Author(s):			
Title:			
Edition:		Year:	
Local:			
Publisher:			

Author(s):			
Title:			
Edition:		Year:	
Local:			
Publisher:			

24. Complementary Bibliography

Author(s):	Chaves, C., Maciel, E., Guimarães, P. e Ribeiro J.C.		
Title:	Instrumentos Estatísticos de Apoio à Economia: Conceitos Básicos		
Edition:	1ª	Year:	1999
Local:	Lisboa		
Publisher:	McGraw-Hill de Portugal		

Author(s):	Silvestre, A. L.		
Title:	Análise de Dados e Estatística Descritiva		
Edition:	1ª	Year:	2007
Local:	Lisboa		
Publisher:	Escolar Editora		

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Ficha técnica MIP / MIP Datasheet	
Título / Title	Course Unit Program 'ANÁLISE DE DADOS': Academic Year 2023/2024
Autor / Author	Prof. Doutor NUNO MIGUEL SIMÕES VENES
Classificação / Classification	-
Descritores / Descriptors	-
Colaborador(es) / Colaborator(s)	-
Data Hora / Date Time	
Formato de dados / Data Format	Texto / Text, PDF
Estatuto de utilização / Usage	Acesso público / Public Access
Relação / Relation	Version 1,0

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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 RICARDO MANUEL DE MAGALHAES PINHEIRO ALVES

12. Assistants

13. Teaching Language

Portuguese

14. General Objectives

Introduction of students to the methods of applied economic analysis.
Introduction of descriptive statistics concepts.
Introduction of students in research techniques and information processing.

15. Specific Objectives

Know the fundamental characteristics of economic and business variables.
Know the fundamental characteristics of quantitative economic and business information.
Learn and practice the main methods of exploratory data analysis, graphical representation and correlation analysis and simple linear regression.
Knowing the most relevant sources of information for carrying out work
empirical.

16. Skills to be acquired

Teaching is centered on solving applications, that is, on developing skills to solve data analysis problems in economics and business sciences, through a systematic resolution methodology: How to present the problem in quantitative terms? What are useful concepts? Are the validity conditions checked? How to manipulate the concepts? What is the answer to the problem? The course is based on a good understanding of the methods and training in the application conditions.

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17. Teaching Methodology

Problem-solving lectures (the teacher introduces the concepts through an application and deduces the abstract aspects); tutorial classes (the teacher presents the applications to the students and with their active participation a solution is sought).

18. Course Unit Program

CHAPTER 1 - INTRODUCTION
CHAPTER 2 - DESCRIPTIVE STATISTICS. EXPLORATORY DATA ANALYSIS.
2.1. Population and sample. Qualitative and quantitative data. Discrete and continuous variables.
2.2. Tabulation and graphical representation of data.
2.2.1. Tabular and graphical representation of qualitative data: frequency table, bars, circle or pie charts.
2.2.2. Tabular and graphical representation of discrete quantitative data: table of frequencies, dot graphs, bar chart, cumulative frequency function.
2.2.3. Tabular and graphical representation of continuous quantitative data: table of frequencies, histogram, frequency polygon.
2.2.4. Stem-and-leaf diagram.
2.3. Measures of location and dispersion.
2.3.1. Location measures: arithmetic mean, geometric mean, and mean harmonica. Median. Fashion. Properties. Quantiles: quartiles, deciles and percentiles. Diagram of extremes and quartiles (box-plot). Sample comparison.
2.3.2. Dispersion measures: amplitude, mean absolute deviation, variance, standard deviation and coefficient of variation. Properties.
2.4. Concentration measures. Gini index and Lorenz curve.
2.5. Shape parameters. Coefficients of asymmetry and flattening or kurtosis.
CHAPTER 3- INDEX NUMBERS.
3.1. Definition and properties of index numbers.
3.2. Simple index numbers.
3.3. Aggregate or composite index numbers. Laspeyres Index and Paasche Index.
3.4. Composite indices.
3.5 Manipulation of index numbers: changing base and linking index series
3.6. Deflation of time series.
CHAPTER 4 - CORRELATION AND REGRESSION.
4.1. Scatter diagrams.
4.2. Simple linear regression model
4.3. Coefficients of determination and Pearson's linear correlation.
4.4. Spearman correlation coefficient for ordinal data

19. Assessment Methods

Group work report (groups of 3 elements from laboratory classes) and two individual tests.

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20. Didactic Resources

Various notes and exercises available on moodle.

21. Sustainability Objectives

Include data from the United Nations Agenda for Sustainable Development, namely the 17 Sustainable Development Goals, in the students' practical work, as a way to make them aware of this problem.

22. Keywords

Population
Average
variance
Correlation
Regression
index numbers

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23. Main Bibliography

Author(s):	Reis, Elizabeth		
Title:	Estatística Descritiva		
Edition:	7ª	Year:	2022
Local:	Lisboa		
Publisher:	Edições Sílabo		

Author(s):	NEGAS, E.		
Title:	ESTATÍSTICA DESCRITIVA		
Edition:	2ª	Year:	2021
Local:	Lisboa		
Publisher:	Sílabo		

Author(s):			
Title:			
Edition:		Year:	
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Publisher:			

24. Complementary Bibliography

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Estatuto de utilização / Usage	Acesso público / Public Access
Relação / Relation	Version 1,0

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