UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Mathematics

Academic Year 2024/2025

1. Organic Unit

Faculty of Business and Economic Sciences

2. Course

Marketing

3. Cycle

1st

4. Course Unit

Mathematics (V1002)

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

Dr. JOSÉ MANUEL SILVA GUERREIRO LOUÇÃO DE MATOS

12. Assistants

13. Teaching Language

Portuguese

14. General Objectives

Provide students with the basic instruments of the area of Mathematics for use in specific curricular units of the area of Management and Economics.

15. Specific Objectives

Familiarize students with the fundamental notions of Matrix Calculus. Review the study of Differential Calculus in R.

16. Skills to be acquired

Resolution and discussion of systems of equations, by Gauss's method. Operations with matrices. Troubleshooting optimization problems with functions of a variable.

17. Teaching Methodology

The subject will be presented in theoretical-practical classes, supported by tutorial orientation sessions where examples of application of the given subject will be presented.

18. Course Unit Program

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1. Matrix Calculus
1.1. Systems of linear equations. Gauss's method.
1.2. Determinants. Calculation of determinants by Gauss's method and Laplace's method.
1.3. Operations with matrices: addition, multiplication by a real number and multiplication.
1.4. Inverse matrix and resolution of matrix equations.
2. Differential calculus in R
2.1. Generalities about real functions of real variable.
2.2. The concept of derivative
2.3. Application of derivatives to the study of functions. Optimization problems.
2.4. Cauchy's rule.

19. Assessment Methods

There will be two continuous assessment tests throughout the semester.

20. Didactic Resources

Students are provided with ample bibliographic indications.

21. Sustainability Objectives

The UC of General Mathematics intends to contribute to sustainability in the following areas:
General
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 - Ensure equal opportunities in university education, including for people in situations of vulnerability.

22. Keywords

Matrix
Determinant
Derivative
Bound

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23. Main Bibliography

Author(s):	António Monteiro		
Title:	Álgebra Linear e Geometria Analítica		
Edition:	1ª	Year:	2001
Local:	Lisboa		
Publisher:	Ed MacGraw-Hill		

Author(s):	António Monteiro, Isabel Matos, Virgínia Miranda		
Title:	Matrizes		
Edition:	1ª	Year:	2018
Local:	Lisboa		
Publisher:	Orion		

Author(s):	António Monteiro, Isabel Matos, Virgínia Miranda		
Title:	Derivadas		
Edition:	1ª	Year:	2017
Local:	Lisboa		
Publisher:	Fundação Calouste Gulbenkian		

24. Complementary Bibliography

Author(s):	Ron Larson, Robert P. Hostetler, & Bruce H. Edwards		
Title:	Cálculo		
Edition:	1ª	Year:	2006
Local:	São Paulo, Brasil		
Publisher:	MacGraw-Hill Interamericana do Brasil		

Author(s):	Earl W. Swokowski		
Title:	Cálculo com Geometria Analítica		
Edition:	1ª	Year:	1995
Local:	São Paulo, Brasil		
Publisher:	Makron Books		

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Autor / Author	Dr. JOSÉ MANUEL SILVA GUERREIRO LOUÇÃO DE MATOS
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