UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Mathematics

Academic Year 2025/2026

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

Students should learn the language of Matrix Calculus and apply it, whenever possible, to solving problems.
They should master the concept of derivative for functions of one real variable, applying it to problem solving, namely optimization problems.

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

Written notes on some of the topics covered in the program will be provided, as well as lists of exercises.
Recommended reading
Practical exercises

21. Sustainability Objectives

Sustainable Development Goals (SDGs - UN)
SDG 4 - Ensure inclusive and equitable quality education for all. Promote lifelong learning. Eliminate gender disparities in education.
SDG 8 - Ensure inclusive and sustainable economic development worldwide. Achieve higher levels of economic productivity through diversification, technological upgrading, and innovation.
SDG 10 - Ensure equal opportunities and reduce inequalities.

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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Título / Title	Course Unit Program 'MATEMÁTICAS GERAIS': Academic Year 2025/2026
Autor / Author	Dr. JOSÉ MANUEL SILVA GUERREIRO LOUÇÃO DE MATOS
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Descritores / Descriptors	-
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