UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Complements of Mathematics

Academic Year 2025/2026

1. Organic Unit

Faculty of Business and Economic Sciences

2. Course

Business Management

3. Cycle

1st

4. Course Unit

Complements of Mathematics (24107)

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 ALEXANDRE MANUEL MORAIS MENA E SILVA

12. Assistants

Dr. JOSÉ MANUEL SILVA GUERREIRO LOUÇÃO DE MATOS

13. Teaching Language

Portuguese

14. General Objectives

The curricular unit, by promoting the learning of some structural concepts of Mathematical Analysis and by presenting some applications of these concepts, aims to provide students with the mathematical tools that are indispensable for the study of various disciplines in the field of Economy, namely those involving quantitative aspects.

15. Specific Objectives

To acquaint the students with the concept of integral, functions of several variables and optimisation

16. Skills to be acquired

Students should be acquainted with the concept an the proprieties of integrals, functions of several variables and optimisation, partial derivatives and optimisation and to be able to solve related problems.

17. Teaching Methodology

The curse is organised in theoretical/practical sessions (with presentation of main concepts and properties) supported by tutorial sessions where examples of application will be presented.

18. Course Unit Program

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1.1. Primitive concept and general properties
1.2. immediate primitives
1.3. Primitivation by parts
1.4. Primitivation of rational fractions
1.5. Primitivation by substitution

2. One-dimensional integral calculus

2.1. The Riemann Integral
2.2. integral properties
2.3. Barrow's Theorem
2.4. Calculation of limited flat areas
2.5. indefinite integrals
2.6. improper integrals

3. Real functions of several real variables

3.1. Generalities. Domains and graphical representation. contour lines
3.2. Brief indications on limits and continuity
3.3. Partial derivatives. Derivation of Composite Functions
3.4. Implicitly defined functions
3.5. Optimization
3.5.1. free extremes
3.5.2. Extremes in limited and closed domains
3.5.3. conditioned extremes

19. Assessment Methods

The continuous assessment component consists of two points written during the semester

20. Didactic Resources

Bibliographic indications and a theoretical-practical workbook available on Moodle.

21. Sustainability Objectives

SDG 4. Quality Education. Develop skills in logical reasoning, inductive and deductive reasoning. Modeling and problem solving.
SDG 8. Decent Work and Economic Growth. Improve employability through mathematical skills and analytical skills.
SDG 9. Industry, Innovation and Infrastructure. Apply mathematics to innovation and technological development.

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22. Keywords

Antiderivatives
Riemann Integral
Functions of several variables
Optimisation

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23. Main Bibliography

Author(s):	R. Larson, R. P. Hostetler, B. H. Edwards		
Title:	Cálculo		
Edition:	1ª	Year:	2006
Local:	São Paulo		
Publisher:	McGraw-Hill		
ISBN Code:			

Author(s):	A. Monteiro, I. Matos		
Title:	Primitivas-Cadernos de Matemática		
Edition:	1ª	Year:	2014
Local:	Amadora		
Publisher:	Orion		
ISBN Code:			

Author(s):	B.Louro; Ana Sá		
Title:	Cálculo Diferencial e Integral em R		
Edition:	1ª	Year:	2015
Local:	Lisboa		
Publisher:	MatCubo-Bertrand		
ISBN Code:			

24. Complementary Bibliography

Author(s):	Salas,Hille		
Title:	Calculus		
Edition:	10ª	Year:	2018
Local:	New Jersey		
Publisher:	John Wiley and sons		
ISBN Code:			

Author(s):	B. Demidovitch		
Title:	Problemas e Exercícios de Análise Matemática		
Edition:	2ª	Year:	1993
Local:	Lisboa		
Publisher:	McGraw-Hill		
ISBN Code:			

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Título / Title	Course Unit Program 'COMPLEMENTOS DE MATEMÁTICA': Academic Year 2025/2026
Autor / Author	Prof. Doutor ALEXANDRE MANUEL MORAIS MENA E SILVA
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