

POLI ESCOLA SUPERIOR TECNOLOGIA GESTÃO TÉCNICO GUARDA	SUBJECT DESCRIPTION	MODELO PED.013.03
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Course	Accounting					
Subject	Mathematics for social sciences					
Academic year	2023.24	Curricular year	1st	Study period	1st semester	
Type of subject	Compulsory	Student workload (H)	Total: 196	Contact: 90	ECTS	7
Professor(s)	Natália Rodrigues					
☒ Area/Group Coordinator ☐ Head of Department	(select)	Graça Tomaz				

PLANNED SUBJECT DESCRIPTION

1. LEARNING OBJECTIVES

It aims that the student acquires knowledge and skills in terms of the theoretical foundations and calculating techniques to the level of the syllabus laid down under the areas of linear algebra and mathematical analysis. It is also intended that student develops reasoning, comprehension and interpretation, as well as the ability to apply the acquired knowledge to solve specific problems related with the purview of the respective course.

2. PROGRAMME

1-Matrices: Definition and algebra of matrices; Matrix transposition; Matrix condensation method; Matrix inversion; Solving linear equations systems; Determinants: Definition and their properties; Minors and algebraic complements; Laplace theorem; Adjoint matrix; Applications.

2- Real Functions of Real Variable: Definition and basic concepts; Study of elementary functions; Limits; Continuity; Bolzano-Cauchy and Weirstrass theorems.

3- Cálculo Diferencial em IR: Notion of derivative and geometric interpretation; Lateral derivative. Derivation rules; Rolle, Lagrange and Cauchy theorems; Extreme and inflection points; Asymptotes to the graph of a function; Complete study of functions.

4- Primitives: Primitive notion; General methods of primitivation; Primitivation of rational fractions.

5- Integral Calculus in IR: Definition of Riemann integral; Fundamental properties; Fundamental theorem of integral calculus; Integration by parts and by substitution.

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

The first and second objectives will be achieved with the teaching of points 1.2.3.4.5, with a view to development of calculus and mathematical thinking as a support, and thus allowing students to foster the skills of logical reasoning and abstraction, in a controlled manner, demanding and effective, and its application in other Curricular Units, as well as in future employment within the area of Accounting.

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4. MAIN BIBLIOGRAPHY

Required:

1. Apostol, T. M. (1985), Cálculo, vol. I, Editora Reverte, Rio de Janeiro.
2. Castro, A.C.M., Viamonte, A.J., Sousa, A.V.(2013), Cálculo I – Conceitos, Exercícios e aplicações, Publindústria.
3. Santana, A.P., Queiró, J.F.(2010), Introdução à Álgebra Linear, Gradiva, Lisboa.
4. Silva, J C (1994), Princípios de Análise Matemática Aplicada, McGraw-Hill, Lisboa.
5. Rodrigues, N. (2020), Caderno de Exercícios, educational material prepared for Mathematics for Social Sciences, ESTG-IPG.

Suggested:

6. I. Malta, S. Pesco e H. Lopes, (2002) *Cálculo a uma Variável* – Vol. I e II, Edições Loyola.
7. Luís, G., S.I., Ribeiro, C.S. (1985), Álgebra Linear, McGraw-Hill, Lisboa.
8. Lima, E. L.(1976), Curso de Análise, Vol 1, Projecto Euclides, Rio de Janeiro.
9. Love, C. E., Rainville, E.D. (1962), Differential and integral Calculus, MacMillan, New York.
10. Trench, W.F. (2013), Introduction to real analysis, Books and monographs, book 7, <http://digitalcommons.trinity.edu/mono/7>.
11. S.T.Tan Matemática Aplicada à Administração e Economia, (2001) Editora Pioneira Thomson Learning, São Paulo, ISBN 8522102457.

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

TEACHING METHODOLOGIES:

Expositive and interactive lesson: theoretical exposition of the contents, interspersed with the resolution and discussion of exercises and problems that are proposed by the Professor.

EVALUATION METHODOLOGIES:

Continuous Assessment: three written tests with a minimum of 4 values in each test and final classification (arithmetic average) greater than or equal to 10, to obtain approval.

Evaluation by final exam: normal season and time of appeal and final classification greater than or equal to 10, to obtain approval.

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Mandatory oral test for final classifications higher than 16 values. Tests will be without consultation and calculator and mobile phones are interdicted.

6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

The adopted methodology is placed on exposing the theoretical concepts rigorously, objectively and with sequential logic, encouraging intuitive understanding and the calculus ability, using explanatory examples to develop scientific-mathematical reasoning and openness for applying the mathematical concepts. This type of methodologies it seeks developing a solid foundation of training so that the student knows how to apply and integrate the knowledge in the area of Mathematics for Social Sciences.

7. ATTENDANCE

Not applicable

8. CONTACTS AND OFFICE HOURS

Professor: Natália Rodrigues; narod@ipg.pt; office 43

Office hours: Tuesday, 15h30-17h30m

Area coordinator: Graça Tomaz; gtomaz@ipg.pt; office 33.

9. OTHERS

Not applicable

DATE

15 de setembro de 2023

SIGNATURES

Assinatura na qualidade de (clicar)

(signature)

Assinatura na qualidade de (clicar)

(signature)