

POLI ESCOLA SUPERIOR TECNOLOGIA GESTÃO TÉCNICO GUARDA	SUBJECT DESCRIPTION	MODELO PED.013.03
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Course	Management					
Subject	Mathematical Finance					
Academic year	2023/2024	Curricular year	2nd	Study period	1st semester	
Type of subject	Compulsory	Student workload (H)	Total: 168	Contact: 75	ECTS	6
Professor(s)	PhD Vítor Gabriel ; e PhD Ascensão Braga					
☒ Area/Group Coordinator ☐ Head of Department	(select)	PhD Rute Abreu				

PLANNED SUBJECT DESCRIPTION

1. LEARNING OBJECTIVES

The objectives defined in the Financial Mathematics UC provide an elementary understanding of the application of mathematical concepts to the analysis of capital remuneration; sensitize the student to the essential role that Financial Mathematics plays in understanding the organization's finances. Finally, it aims to develop technical skills in students, so that they can evaluate different investment and financing alternatives for the organization. In particular, students should be able to:

- Understand the fundamental concepts, language and terms of Financial Mathematics;
- Understand the mathematical reasoning inherent in financial operations of interest calculation in the simple and compound regime, capital equivalence, income under compound interest regime and loan amortization;
- and apply financial calculation techniques to support investment and financing decision-making.

In view of the International Norms (IAESB-IFAC), the student of this UC must acquire learning results, which can be applied in work environments characterized by moderate levels of ambiguity, complexity and uncertainty.

2. PROGRAMME

1. Introduction
2. Capital and Interest
3. Capitalization and discount
4. Rents
5. Repayment of loans
6. Financial instruments
7. Bond loans

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

The syllabus contents (1 to 7) are in coherence with the first objective of the curricular unit given that all topics included in the program were purposely selected to provide a fundamental view of the study area in question.

With regard to the second objective, the topics (2 to 4) of the Equity and Income Regimes, for example, are usually used in methodologies, addressed in other curricular units of the study

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cycle, which intend to present in a true and appropriate way the financial situation organizations.

In relation to the third objective, the themes (2,4,5,6 and 7) of the Equity, Income, Loan Amortization and Bond Loan Schemes describe approaches and techniques that make it possible to appreciate the financial merit of the organizations' investment and financing options.

4. MAIN BIBLIOGRAPHY

Barroso, M., Couto, E., Crespo, N. (2009). Cálculo e Instrumentos Financeiros: da Prática para a Teoria, Escolar Editora.
Cadilhe, M., Lago, R. (1998). Matemática Financeira Aplicada, Edições ASA.
Gabriel, V. (2022). Fundamentos de Matemática Financeira, Silabas & Desafios.
Gabriel, V. (2022). Aplicações de Matemática Financeira com Excel, Silabas & Desafios.
Lisboa, J., Augusto, M. (2018). Cálculo Financeiro, Vida Económica.
Mateus, Alves (2009). Exercícios Práticos de Cálculo Financeiro, Edições Sílabo.
Matias, F., Martins, A., Monteiro, C., Correia, T. (2020). Matemática Financeira, Edições Sílabo.
Matias, R. (2018). Cálculo Financeiro: teoria e prática, Escolar Editora.
Rodrigues, J., Nicolau, M. (2010). Elementos de Calculo Financeiro, Rei dos Livros.
Santos, L., Laureano, R. (2011). Fundamentos e Aplicações do Cálculo Financeiro: Casos práticos, Edições Sílabo.

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

TEACHING METHODOLOGIES:

Theoretical-practical expository method using audiovisual media; Case Study; Seminar; Provision of e-learning content; Collaborative work tools; Periodic collaboration sessions.

EVALUATION METHODOLOGIES:

Continuous assessment - the student obtains approval when the weighted average of the completion of two written tests, (the 1st carried out on a date fixed by the teacher and the 2nd carried out on a fixed date Directorate of ESTG) and weighted with 50% of the final grade, is equal to or more than ten (10) values, on an entire scale between zero and twenty, being exempted from examination. There is a requirement that the grade obtained in each of the tests cannot be less than 6.0 values.

Assessment at the time of the Normal Exam: The student who has not passed the continuous assessment or has not taken it, obtains approval when the exam classification is equal to or higher than 10 values, on a date fixed by the Board.

Assessment at the time of the Appeal Exam: the student who has not been successful in the continuous assessment or at the time of the normal exam, or has not taken them, obtains approval when the exam classification is equal to or higher than ten values, on an entire scale between zero and twenty, on a date fixed by the Board.

6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

Theoretical- practical expository method with the use of audiovisual media - so that the student gains knowledge in the area of Financial Mathematics through the dynamics of the

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learning process that is driven by the use of audiovisual media and distance learning platforms (moodle plataforma).

Case studies - so that the student gains knowledge and skills in the main aspects related to account studies and their respective, implying a practical approach through case studies;

Seminar - so that the student gains knowledge in the area of Financial Mathematics, in a real context, through the experiences of personalities of recognized merit;

Provision of multimedia content in e-learning- so that the student can access the contents of the course through new methods, activities and communication tools, through which the student masters the tools, concepts, methodologies and techniques that reinforce his ability to critical performance and provide you with a global view to optimize your performance in the area of Financial Mathematics through the resolution of practical cases and exercise sheets, supported in the support manuals for the Course. The sharing of relevant professional experiences, the use of information technologies and the use of financial functions, available in the Excel spreadsheet, will be encouraged throughout these activities;

Collaborative working tools - so that the student participates in an interventional and proactive way in the elaboration and discussion of new strategies and practices that allow him to develop critical capacity with consistent arguments, facts and consistent logical reasoning.

Periodic collaboration sessions- for students to reinforce their capacity for critical performance and consolidate knowledge in order to gain skills that guarantee a global vision to optimize their performance in the area of Financial Mathematics.

7. ATTENDANCE

NA

8. CONTACTS AND OFFICE HOURS

Docentes:

Vítor Gabriel (vigab@ipg.pt); Telefone:271220120; Gabinete: 17 Voip 1217

Ascensão Braga (sbraga@ipg.pt); Phone:271220120; Gabinete: 35 Voip 1235

Office Hours: Wednesday: Monday 14:30h-16:00; Wednesday: 9:00- 11:00.

Área Coordenador: Rute Abreu (ra@ipg.pt), Telef: + 351 271 220 120 (Gab. 50)

DATE

Outubro/2023Clique

SIGNATURES

Professor(s), Area/Group Coordinator or Head of Department signatures

Assinatura na qualidade de (clique)

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