

Course Unit	Applied Mathematics for Management		Field of study	Economy and Management/Mathematical and Quantitative Methods														
Bachelor in	Public Management and Administration		School	School of Public Management, Communication and Tourism														
Academic Year	2023/2024	Year of study	2	Level	1-2													
Type	Semestral	Semester	1	ECTS credits	6.0													
Code			9165-315-2103-00-23															
Workload (hours)	162	Contact hours	T	-	TP	60	PL	-	TC	-	S	-	E	-	OT	20	O	-

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Ricardo Jorge Vieira Correia

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Read, write and use financial-mathematical language with fluidity;
2. Model and solve problems using financial calculus concepts;
3. Understand the scope of financial operation and the meaning of three variables involved: capital, time and interest rate;
4. Understand the golden rule of financial calculus: to compare capitals it's necessary to reported them to the same moment;
5. Understand the concept of accumulated capital in Simple and Compound Interest regimes, as well as the simple and compound capitalization factor;
6. Understand the concept of rents in its several forms, as well as how to prepare the amortization table of a bank loan and bond.

Prerequisites

Before the course unit the learner is expected to be able to:
Use the language and elementary techniques of mathematics.

Course contents

1) Introduction and basic concepts; 2) Capitalization schemes; 3) Interest Rates; 4) Equivalence of capitals; 5) Rents; 6) Repayment of loans.

Course contents (extended version)

1. INTRODUCTION
 - Basic concepts. Time, capital and interest. Interest rate.
2. CAPITALIZATION SCHEMES
 - Simple interest regime.
 - Compound interest regime.
3. INTEREST RATES.
 - Proportional and equivalent rates.
 - Nominal and effective interest rates.
4. EQUIVALENCE OF CAPITALS
 - Capitalization and Actualization.
 - Capitalization and Actualization in Simple Interest regime.
 - Capitalization and Actualization in Compound Interest regime.
5. RENTS
 - Concept. Immediate and deferred rents: anticipated and posticipated rents;
 - Certain, whole, split and constant terms rents.
 - Other rents: Leasing, financial leasing and long-term rental.
6. REPAYMENT OF LOANS
 - Classical repayment of loans: French, american and constant amortization Systems.
 - Amortization table.
 - Leasing and financial leasing.

Recommended reading

1. Laureano, R. & Santos, L. (2011). Fundamentos de Cálculo Financeiro (1ª ed.). Lisboa: Edições Sílabo. ISBN: 978-972-618-642-7.
2. Laureano, R. & Santos, L. (2003). Fundamentos e aplicações do Cálculo Financeiro. Lisboa: Edições Sílabo. ISBN: 978-618-308-1.
3. Mateus, A. (2009). Cálculo Financeiro (3ª ed.). Lisboa: Edições Sílabo. ISBN: 978-972-618-274-0.
4. Matias, R. (2004). Cálculo Financeiro - Teoria e Prática (2ª ed.). Lisboa: Escolar Editora. ISBN 978-972-592-210-1.
5. Rodrigues, J. & Nicolau, I. (2005). Elementos de Cálculo Financeiro (8ª ed.). Lisboa: Áreas Editora. ISBN 972-8472-91-9.

Teaching and learning methods

All topics will be exposed in classes where students can take part on their analysis and discussion. A book of exercises complements the course texts where students have the opportunity to learn and consolidate their skills.

Assessment methods

1. Final Evaluation (alternative 1) - (Regular, Student Worker) (Final, Supplementary)
 - Intermediate Written Test - 50% (It is required a minimum score of 7 values.)
 - Final Written Exam - 50% (Minimum score: 7. Mandatory minimum attendance: 80% of classes (regular students in final season).)
2. Final Evaluation (alternative 2) - (Regular, Student Worker) (Final, Supplementary, Special)
 - Final Written Exam - 100% (Exam, including all the contents.)
3. Exchange students (incoming) - (Regular, Student Worker) (Final, Supplementary, Special)
 - Development Topics - 100% (Project about one subject of course contents.)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation			
Ricardo Jorge Vieira Correia	Bernadete de Lourdes Bittencourt	Catarina Alexandra Alves Fernandes	Luisa Margarida Barata Lopes
17-10-2023	19-10-2023	19-10-2023	20-10-2023

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