



PERSONA CIENCIA EMPRESA

UNIVERSITAT RAMON LLULL

**Code:** 53018**Name of the subject:** Financial Mathematics**GENERAL CHARACTERISTICS****Number of credits****ECTS:** 4.5**Language/s**

Catalan

Spanish

English

**Type**

Normal

**Professor/s**

Larraga López, Pablo

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**DESCRIPTION****BRIEF DESCRIPTION AND JUSTIFICATION**

This course aims to provide students with the necessary tools to analyze in depth and appropriately assess financial transactions between individuals and especially between businesses. The tools provided by the field of financial mathematics are essential for other subjects related to finance, including Financial Management and Financial Markets.

**COMPETENCES**

As a consequence of the assimilation of the subject's learning contents, the student will be able to:

- Undertaking coherent investment and financing decisions according to the goals of the company. (CE7)
- Assimilate the techniques and quantitative methods that allow him to analyze information in order to perform coherent data-grounded decision making. (CE17)
- Distinguish and separate the pieces of a whole in order to identify its principles and elements. The student will be able to integrate information and/or ideas in order to achieve a global vision. (Analysis and Synthesis) (CT3)

## PREREQUISITES

According to the valid academic plan and academic regulation.

## CONTENTS

1. Introduction: financial transactions.
  - 1.1 Basics
  - 1.2 Elements of a financial transaction
  - 1.3 Types of financial transactions
  - 1.4 Yield and rate of interest
2. Simple Interest.
  - 2.1 Simple Capitalization
  - 2.2 Equivalent Rates
  - 2.3 Simple Discount
  - 2.4 Weighted Average Maturity and Common Maturity
  - 2.5 Financing cost via suppliers
3. Compound Interest.
  - 3.1 Annual Capitalization
  - 3.2 Fractioned Capitalization
  - 3.3 Continuous Capitalization
  - 3.4 Equivalent Rates
4. Financial Annuities.
  - 4.1 Classification criteria
  - 4.2 Constant Annuities
  - 4.3 Annuities in Geometric Progression
  - 4.4 Annuities in Arithmetic Progression
5. Loans.
  - 5.1 General Information
  - 5.2 Loan Repayment Systems
    - 5.2.1 Simple Loan
    - 5.2.2 American Loan
    - 5.2.3 French Loan
  - 5.3 Periods free of payments and repayments

## METHODOLOGY

## TRAINING ACTIVITIES:

ECTS Credits	Competencies	
Lectures presenting concepts and procedures	1.1	CE7, CE17, CT3
Practical sessions (exercises, case resolution)	0.9	CE7, CE17, CT3
Assignments by Students	0.7	CE7, CE17, CT3
Seminars or tutorials	0.2	CE7, CE17

Personal study activities	1.4	CE7, CE17, CT3
Assessment sessions	0.2	CE7, CE17, CT3
Internship in Company	0	
<b>TOTAL</b>	4,5 credits	

## EXPLANATION OF TEACHING METHODOLOGY

Theoretical sessions (theoretical explanations and examples) alternate with practical sessions in which students must solve (individually or in groups) problems related to the course syllabus.

The students, working in groups of 3 or 4 people, analyze real-life financial products in detail. The study is both inside and outside the classroom. At the end of the course, the students will present a report explaining the study carried out.

## EVALUATION

### METHODS OF EVALUATION

Evaluation Methods	Weight	Competencies
Final exam	40%	CE7, CE17, CT3
Partial exams	30%	CE7, CE17, CT3
Following up activities	10%	CE7, CE17, CT3
Homework and presentations	20%	CE7, CE17, CT3
Experimental work or fieldwork	0%	
Projects	0%	
Evaluation of the company or institution	0%	
Participation	0%	

## LEARNING OUTCOMES

The content of this subject should equip students to achieve the following objectives:

1. Understand financial transactions and their components.
2. Successfully analyze the most common financial transactions.
3. Choose the most appropriate financial transaction from various options.

The activities over the course should enable students to develop the following competency:

4. Analysis and Synthesis. (CT3)

## EVALUATION

### Ordinary call of January:

The course can be passed if the final grade is equal to or higher than 5 and final exam mark in January is not lower than 4. The final grade of the course is calculated taking into account the following percentages:

- 40% final exam (with a grade of at least 4 out of 10)
- 30% continuous assessment tests
- 20% group activities
- 10% exercises in class, participation, and behavior

### Ordinary call of July:

The July exam always includes the totality of the course. 70% of the mark corresponds to the exam mark and 30% to the activities in groups, exercises, and participation.

## **EVALUATION OF COMPETENCES**

Students' acquisition of the competences mentioned above will be assessed through:

Individual exercises and group work: in which students will put the knowledge acquired during lectures into practice.

Continuous assessment tests: examinations during the course where the degree of learning of the theoretical and practical knowledge associated with the subject is evaluated. This part includes the final semester exams, where a minimum grade 4 is requested.

## **BIBLIOGRAPHY**

### **Bibliography**

Miner Aranzábal, J. (2008). *Curso de Matemáticas Financieras*. Editorial McGraw-Hill.

CEF (2004). *Libro de operaciones financieras*. Available at: <[www.matematicas-financieras.com](http://www.matematicas-financieras.com)>

## **DOCUMENT RECORD**

## **PREVIOUS CHANGES**

## **LAST REVISION**

October 6, 2017, Dr. Octasiano Miguel Valerio Mendoza