



Matemáticas
Financieras /
Financial
Mathematics

Grado en Creación,
Administración y
Dirección de Empresas



UNIVERSIDAD
NEBRIJA

SYLLABUS

Course: Matemáticas Financieras / Financial Mathematics

Degree: Grado en Creación, Administración y Dirección de Empresas

Type: Mandatory

Languages: Español / English

Modality: In-Person and Online

Credits: 6

Year: 1st

Semester: Spring Semester / Sem2

Professors: García-Donas Guerrero, Raquel; Fernández Carnicero, Alberto; Sevilla Llewellyn Jones, Jose Maria

1. COMPETENCES AND LEARNING OUTCOMES

1.1. General and Specific Competencies

- Competencias básicas: CB1, CB2, CB3, CB4, CB5
- Competencias generales: CG1, CG2, CG5, CG6, CG11, CG12, CG13, CG14, CG15, CG16, CG17, CG19
- Competencias específicas: CE8, CE9, CE18, CE21, CE22, CE23, CE24

1.2. Learning outcomes

- Understand financial laws and know how to trade with them by learning how to make financial decisions
- Know how to calculate the current and final values of Financial Income
- Understand and derive the components of loan amortization tables
- Estimate the creation or destruction of value derived from investment decisions

2. CONTENTS

2.1 Prerequisites

None.

2.2 Description

Techniques of quantitative analysis and financial calculation as a basic tool to analyze the different options of financing and investment: simple and compound capitalization, rents, loans, valuation of, investment projects, etc.

2.3 Covered Topics

Subject syllabus.

1. Module 1: Essential statements.
 - a. Financial capital. Financial agreement. Financial equivalence.
 - b. Financial laws. Derivative magnitudes.
2. Module 2: Capitalisation and discount laws.
 - a. Simple capitalisation law.
 - b. Compound capitalisation law.
 - c. Comparison between capitalisation laws. Equivalent capitalisation rates.
 - d. Commercial simple discount law.
 - e. Rational simple discount law.
 - f. Compound discount law.
3. Module 3: Rents.
 - a. Meaning of rent. Unit, temporary and prepaid rents.
 - b. Unit, temporary and postpaid rents.
 - c. Comparison between prepaid and payable rents. Perpetual rents or annuities.
 - d. Arithmetic progression rents.
 - e. Geometric progression rents.
 - f. Fractional rents.

[Midterm]

4. Module 4: Loans.
 - a. Meaning of loan. General formulation of a loan.
 - b. Amortisation schedule.
 - c. Simple loan. American system.
 - d. Linear system.
 - e. French system.
 - f. Loans with variable rate.
5. Module 5: Firm valuation.
 - a. Investment firm valuation.
 - b. Gross Profit. Gross profitability pattern. Annual average profitability.
 - c. Pay-back.
 - d. Net Present Value.
 - e. Internal Rate of Return.

2.4 Individual / Group Assignments

Assignments, tasks, reports or other projects may be developed for the whole semester.

After the end of both *Capitalisation and Yield* and *Loans and Valuation* modules, exercises or problems will be requested via Blackboard platform.

2.5. Learning Activities

LEARNING ACTIVITIES		
In-Person Learning	Hours	Attendance %
A1 Lectures	45	100%
A2 Discussion Sections	9	100%
A3 Mentoring	9	100%
A4 Individual / Group Assignments	18	0%
A5 Online Assignments	6	50%
A6 Extracurricular Materials	6	0%
A7 Self Study	51	0%
A13 Exam	6	100%
Online Learning	Hours	Attendance %
A9 Asynchronous Classes	12	0%
A10 Discussion Sections, Synchronous or Asynchronous	12	0%
A3 Mentoring	24	0%
A4 Individual / Group Assignments	18	0%
A5 Online Assignments	12	0%
A6 Extracurricular Materials	12	0%
A7 Self Study	54	0%
A13 Exam	6	100%

Methodologies:

In-Person: MD1, MD2, MD3, MD4, MD5

Online: MD1, MD2, MD3, MD4, MD5

GRADING RUBRICS

3.1. Grades

Grades are calculated as follows:

0 - 4.9 Fail (SS)

5.0 - 6.9 Pass (AP)

7.0 - 8.9 Notable (NT)

9.0 - 10 Outstanding (SB)

The mention of "Matrícula de Honor" may be awarded to students who have obtained a grade equal to or greater than 9.0.

3.2. Evaluation criteria

Ordinary Session

Modality: In-Person

Evaluation Criteria	Percentage
S1 Attendance and Participation	10%
S2 Individual / Group Assignments	30%
S3 Midterm Exam (On-Site)	10%
S4 Final Exam (On-Site)	50%

Modality: Online

Evaluation Criteria	Percentage
S10 Participation (Forums and Supervised Activities)	10%
S2 Individual / Group Assignments	30%
S4 Final Exam (On-Site)	60%

Extraordinary Session

Modality: In-Person

Evaluation Criteria	Percentage
S2 Individual / Group Assignments	30%
S4 Final Exam (On-Site)	70%

Modality: Online

Evaluation Criteria	Percentage
S2 Individual / Group Assignments	30%
S4 Final Exam (On-Site)	70%

3.3. Restrictions

Minimum Grade

To be able to qualify for inclusion of the above evaluation criteria percentages in the calculation of the final grade, it is necessary to obtain at least a grade of 5.0 in the final test.

Attendance

Students who have missed more than 25% class meetings (unexcused) may be denied the right to take the final exam in the ordinary session.

Writing Standards

Special attention will be given to written assignments, as well as to exams, regarding both presentation and content in terms of grammatical and spelling aspects. Failure to meet the minimum acceptable standards may result in point deduction.

3.4. Plagiarism Warning

Nebrija University will not tolerate plagiarism under any circumstances. Reproducing content from sources other than a student's own work (the internet, books, articles, and peers' work, among others) without proper citation will be considered plagiarism.

If these practices are detected, they will be considered a serious offense, and the sanctions provided for in the Student Regulations may be applied.

4. BIBLIOGRAPHY

Requested Reading

Garret, S. (2015). *Introduction to Actuarial and Financial Mathematical Methods*. Elsevier.
Navarro, E. (2019). *Matemáticas de las operaciones financieras*. Pirámide.

[Recommended Reading](#)

- Aparicio, A., Gallego, R., Ibarra, A. y Monroel, J.R., (2000). *Cálculo financiero. Teoría y Ejercicios*. Paraninfo.
- Baquero, M y Maestro, M. L. (2003). *Problemas Resueltos de Matemática de las Operaciones Financieras*. Thomson.
- Miner, J., (2005). *Matemática Financiera*. MC Graw Hill.
- Tovar, J. (2001). *Operaciones Financieras (Teoría y Problemas Resueltos)*. Editorial Centro de Estudios Financieros.
- Valls, M. C. y Cruz, S. (2009). *Introducción a las Matemáticas Financieras. Problemas Resueltos*. Pirámide.