

Approval date: 23/06/2023

COURSE GUIDE

Introduction to Financial Operations (2261114)

Grado (Bachelor's Degree)	Grado en Economía (Bilingüe)		Branch	Social and Legal Sciences			
Module	Formación Básica		Subject	Empresa			
Year of study	1 ^o	Semester	1 ^o	ECTS Credits	6	Course type	Core course

PREREQUISITES AND RECOMMENDATIONS

They are not required.

BRIEF DESCRIPTION OF COURSE CONTENT (According to the programme's verification report)

- Basic concepts: financial capital and operation.
- Classic financial theorems.
- Short-term operations.
- Annuity Theory.
- Constitution and amortization: dynamics and effective interest rate.

SKILLS

GENERAL SKILLS

- CG03 - Ability to analyse and summarise.
- CG04 - Ability to organise and plan.
- CG05 - Oral and written communication skills in Spanish.
- CG06 - Computer skills related to the field of study.
- CG07 - Ability to manage information.
- CG08 - Problem-solving skills.
- CG09 - Ability to make decisions.
- CG11 - Ability to work in an interdisciplinary team.
- CG16 - Ability to engage in critical and self-critical reasoning.
- CG17 - Ability to learn and work autonomously.
- CG18 - Ability to adapt to new situations
- CG19 - Creatividad o habilidad para generar nuevas ideas
- CG20 - Leadership skills.
- CG22 - Concern for quality.
- CG24 - Ability to apply knowledge to practice.



- CG25 - Ability to search for information and research.
- CG26 - Ability to design and manage projects.

SUBJECT-SPECIFIC SKILLS

- CE01 - Know and apply the basic concepts of Business Management.
- CE02 - Acquire skills and master computer tools applied to different subjects.
- CE03 - Be able to understand the different financial laws and their application to financial operations.
- CE04 - Be able to value different types of financial income and to derive the effective return on financial investments and sources of finance.
- CE05 - Know and apply the basic concepts of Marketing.
- CE06 - Understand the processes involved in the creation, innovation and development of a company, as well as the promotion of entrepreneurship and business ethics.
- CE07 - Ability to search for information and research.
- CE08 - Know and apply the basic concepts of Accounting.
- CE09 - Understand the role of the accounting system in the company and the importance of its internal and external operations (investment and financing).
- CE10 - Understand the regulatory framework and legal requirements for drawing up summary financial statements and analyse the asset situation and evolution, as well as the results obtained in the activity.

TRANSFERABLE SKILLS

- CT01 - Through the knowledge and application of concepts learnt in the Bachelor's Degree (Grado), be able to identify and anticipate economic problems relevant to the allocation of resources, both in the public and private sectors.

LEARNING OUTCOMES

The objective of this program is to provide the student with an overview of the basic concepts of Financial Mathematics.

More specifically, the student:

- will understand the simple financial theorem and will apply it to short-term operations.
- will understand the compound and continuous financial theorems.
- will know how to identify and value an annuity.
- will understand the concepts of loan and obligation and calculate the magnitudes related to them.

PLANNED LEARNING ACTIVITIES

THEORY SYLLABUS

Topic 1. Basic concepts.

1. Financial Capital.
2. Financial Theorem. Properties.
3. Financial Operation.



4. Mathematical reserve or financial balance.
5. Commercial characteristics, effective interest rate and APR.
6. How interest rates are formed. The EURIBOR.

Topic 2. Simple interest.

1. Simple capitalization with due interest rate.
2. Simple discount with due interest rate or Rational Discount.
3. Simple discount with prepaid interest rate or Commercial Discount.
4. Change in units of measure: equivalent rates.
5. Substitution of capital: common maturity and average maturity.
6. Annex I: Simple capitalization with prepaid interest rate.
7. Annex II: Comparison of the different theorems.

Topic 3. Short-term operations.

1. Discount of bills of exchange.
2. Settlement of current savings accounts.
3. Settlement of current credit accounts.
4. Market operations:
 1. Spot purchase-sale.
 2. Forward purchase-sale.
 3. Operations with repurchase agreement (REPO).

Topic 4. Compound and continuous theorems.

1. Compound capitalization with due interest rate.
2. Compound discount with due interest rate.
3. Change in units of measure: equivalent rates.
4. Effective and nominal interest rate.
5. Continuous capitalization and discount.
6. Application of compound and continuous theorems.
7. Annex I: Compound capitalization and discount with prepaid interest rate.
8. Annex II: Comparison between the different theorems.

Topic 5. Valuation of annuities.

1. What is an annuity? Types of annuities.
2. Value of an annuity: present and future values.
3. Constant progressions: ordinary and perpetuity.
4. Geometric progressions: ordinary and perpetuity.
5. Arithmetic progressions: ordinary and perpetuity.
6. Fractional progressions.
7. Examples. Constitution of a capital through an annuity.

Topic 6. Loans.

1. What is a loan?
2. Evolution of a loan.
3. Amortization systems.
 1. Periodic payment of interest.
 2. French system.
 3. Constant repayment amortization.



4. Floating interest rate loans.
5. Grace period and cancellation in a loan.
6. Commercial characteristics: Effective interest rate and TAE.
7. Amortized Cost.
8. Annex I: Amortization with Geometric or Arithmetic payments.
9. Annex II: Sinking Fund and German System.

PRACTICAL SYLLABUS

The theory program is complemented by the practical program.

RECOMMENDED READING

ESSENTIAL READING

CAPINSKI, M., & ZASTAWNIAK, T. (2003). Mathematics for finance: an introduction to financial engineering (1st ed. 2003). Springer London. <https://doi.org/10.1007/b97511>

FRIAS-ACEITUNO, J.V. (2023). Introducción Operaciones Financieras. Editorial: Técnica Avicam.

LOVELOCK, D., MENDEL, M. & WRIGHT, A.L. (2007). An Introduction of he Mathematics of Money. Saving and Investing (1st ed. 2000). Springer New York. ISBN: 978-0387-34432-4.

PETTERS, A. O., & DONG, X. (2016). An Introduction to Mathematical Finance with Applications: Understanding and Building Financial Intuition (1st ed. 2016). Springer New York. <https://doi.org/10.1007/978-1-4939-3783-7>

POLLARD, A. H. (1977). An introduction to the mathematics of finance (Second edition). Pergamon Press.

COMPLEMENTARY READING

ALEGRE ESCOLANO, P. y otros. (1989): Ejercicios resueltos de matemática de las operaciones financieras. Ediciones AC.

ALEGRE ESCOLANO, P. y otros. (1997): Curso interactivo de matemática financiera. Editorial McGrawHill.

BONILLA, M.; IVARS, A.; MOYA, I. (2006): Matemática de las Operaciones Financieras: teoría y práctica. Editorial Thomson.

DE PABLO, A. (1994): Unidades didácticas de matemáticas de las operaciones financieras. UNED.

GARCÍA BOZA, J. (2002): Problemas resueltos de matemática de las operaciones financieras, Ed. Pirámide, Madrid.

GARCÍA BOZA, JUAN (2011). Matemáticas Financieras. Editorial: Pirámide.

GIL PELAEZ, L. (1987): Matemática de las operaciones financieras. Editorial AC.

GIL PELAEZ, L. (1987): Matemática de las operaciones financieras: problemas resueltos. Editorial AC.

GONZÁLEZ CATALÁ, V. (1992): Análisis de las Operaciones Financieras, Bancarias y Bursátiles. Ciencias Sociales, Madrid.

GONZÁLEZ CATALÁ, V. (1999): Operaciones Financieras, Bancarias y Bursátiles. Curso práctico. Ciencias Sociales, Madrid.

MENEU, V.M.; JORDÁ, M.P.; BARREIRA, M.T. (1994): Operaciones Financieras en el Mercado Español. Editorial Ariel Economía.

RODRIGUEZ RODRÍGUEZ, A. (1984): Matemática de la financiación. Romagraf. S.A.

TOVAR JIMENÉZ, JOSÉ (2ª edición): Operaciones Financieras (Teoría y Problemas Resueltos). Editorial CEF.



RECOMMENDED LEARNING RESOURCES/TOOLS

- [European Central Bank](#)
- [Tesoro público](#)
- [Banco de España](#)
- [Financial Times](#)
- [Invertia. El Español](#)

TEACHING METHODS

- MD01 - Face-to-face teaching in the classroom
- MD02 - Individual work by the student; retrieval, consultation and processing of information; problem solving and practical case studies; and completion of assignments and presentations
- MD03 - Individual and/or group tutoring and evaluation

ASSESSMENT METHODS (Instruments, criteria and percentages)

ORDINARY EXAMINATION DIET

The preferred system will be the continuous assessment system. However, a single final assessment could be applied when students cannot comply with the continuous evaluation method for working reasons, health status, disability, mobility programs or any other justified cause. The student may request the single final assessment in accordance with the Student Assessment and Grading Regulations (art. 8).

The continuous assessment system is based on:

- A **partial exam** that will suppose a 40% of the final grade for the subject. This exam will consist of two parts: theory and practice. Each of them will have a maximum score of 10 points. Theory will be weighted at 30% (**1.2 points**), and practice, at 70% (**2.8 points**). It is necessary to obtain at least a minimum of 3.5 points out of 10 points in each of these parts (theory -**0.42 points**- and practice -**0.98 points**-). Otherwise, the grade will be "**Not Passed**", and the student will have to take an exam of this part of the subject in the ordinary call (on the date set by the Center). The theoretical part will consist of a series of multiple-choice questions with a single correct answer. Wrong answers score negatively (the penalty will be notified to the student), unanswered questions do not add or subtract. The practice will consist of solving exercises.
- A **final exam** to be taken on the official date set by the Center (ordinary call), which will suppose a 60% of the final grade for the subject. It will consist of two parts: theory and practice. Each of them will have a maximum score of 10 points. Theory will be weighted at 30% (**1.8 points**), and practice, at 70% (**4.2 points**). It is necessary to obtain at least a minimum of 3.5 points out of 10 points in each of the exam parts (theory -**0.63 points**- and practice -**1.47 points**-). When this last requirement is not met, the overall exam grade and, therefore, the final grade of the subject will be the sum of the marks obtained in the partial and final tests, with a maximum of 3 points. The student who does not appear for this final exam will have the qualification of "**Not presented**". The theoretical part will consist of a series of multiple-choice questions with a single correct answer. Wrong answers score negatively (the penalty will be notified to the student), unanswered questions do not add or subtract. The practice will consist of solving exercises.

If student would take the partial exam again on the ordinary call, he/she will renounce to the grade obtained in the previous partial exam. In such a case, the grade obtained in this new exam



will replace the previous one, if any.

EXTRAORDINARY EXAMINATION DIET

In the extraordinary call, the assessment will be carried out entirely through an extraordinary exam, out of a total score of 10 points, even if during the development of the subject the continuous assessment system had been chosen.

As in the ordinary call, this exam will consist of two parts: theory and practice, which will be weighted at 30% and 70% respectively (theory **3 points** and practice **7 points**). To pass the subject, the student must obtain a minimum of 3.5 points out of 10 points in each of these parts (theory **-1.05 points-** and practice **-2.45 points-**). When this last requirement is not met, the overall exam grade and, therefore, the final grade of the subject will be the sum of the marks obtained with a maximum of 3 points. Likewise, the total score must be 5 points out of 10 to pass the subject. The student who does not take this final exam will have the grade of "**Not presented**".

The theoretical part will consist of a series of multiple-choice questions with a single correct answer. Wrong answers score negatively (the penalty will be notified to the student), unanswered questions do not add or subtract. The practice will consist of solving exercises. **Being an extraordinary call, the previous qualifications obtained in the continuous assessment system or final single assessment will not be considered.**

SINGLE FINAL ASSESSMENT (evaluación única final)

In the single final assessment, the evaluation will be carried out entirely through an extraordinary exam, out of a total score of 10 points.

As in the ordinary call, this exam will consist of two parts: theory and practice, which will be weighted at 30% and 70% respectively (theory **3 points** and practice **7 points**). To pass the subject, the student must obtain a minimum of 3.5 points out of 10 points in each of these parts (theory **-1.05 points-** and practice **-2.45 points-**). When this last requirement is not met, the overall exam grade and, therefore, the final grade of the subject will be the sum of the marks obtained with a maximum of 3 points. Likewise, the total score must be 5 points out of 10 to pass the subject. The student who does not take this final exam will have the grade of "**Not presented**".

The theoretical part will consist of a series of multiple-choice questions with a single correct answer. Wrong answers score negatively (the penalty will be notified to the student), unanswered questions do not add or subtract. The practice will consist of solving exercises.

ADDITIONAL INFORMATION

Students must necessarily be provided with the respective D.N.I., driver's license or official passport to take any of the programmed exams.

