

Degree programme	Type	Course
Accounting and Finances	OB	2

Contact lecturer

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Teaching staff

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Group languages

You can consult this information at the [end](#) of the document.

Prerequisites

There are not prerequisites

Objectives

The aim of this course is to provide the basic knowledge of financial mathematics required to analyse and evaluate financial operations at different points in time.

By the end of the course, students will be able to:

1. Understand the fundamental concepts of financial mathematics and the time value of money.
2. Apply capitalization and discounting methods to simple and compound interest operations.
3. Evaluate financial annuities by calculating present value and future value.
4. Analyse loans and amortization systems, preparing and interpreting amortization schedules.
5. Solve basic financial problems in economic and business contexts.

Learning outcomes

- CM16 (Critically analyse the principles, values and procedures governing the practice of the profession.) Critically analyse the principles, values and procedures governing the practice of the profession.
- CM17 (Determine the financial system used in each of the financial operations, as well as the fixed and variable expenses affecting said operation.) Determine the financial system used in each of the financial

- operations, as well as the fixed and variable expenses affecting said operation.
- CM18 (Quantify the APR of each of the analysed operations and the effective cost including expenses not considered by the Bank of Spain to calculate the APR.) Quantify the APR of each of the analysed operations and the effective cost including expenses not considered by the Bank of Spain to calculate the APR.
 - CM19 (Quantify the new amounts to be paid in a financial operation with variable interest when there is an unforeseen change in interest types.) Quantify the new amounts to be paid in a financial operation with variable interest when there is an unforeseen change in interest types.
 - KM16 (Recognise which types of organisations allow for appropriate value maximisation.) Recognise which types of organisations allow for appropriate value maximisation.
 - SM11 (Identify the functioning of the financial system and the different financial intermediaries, the regulatory bodies and functions, the methods used in pricing, the specific financial operations and the micro and macroeconomic functions of the participants.) Identify the functioning of the financial system and the different financial intermediaries, the regulatory bodies and functions, the methods used in pricing, the specific financial operations and the micro and macroeconomic functions of the participants.

Contents

Block 1. Fundamentals of Financial Mathematics

Topic 1. Introduction

- Financial operation
- Financial capital
- Time value of money
- Financial equivalence

Block 2. Capitalization and Discounting

Topic 2. Simple interest

- Final capital
- Present value
- Rate and term
- Bill discounting
- Commercial and rational discounting

Topic 3. Compound interest

- Compound capitalization
- Equivalence
- Continuous capitalization
- Interest rate structure: Nominal, Effective and Equivalent

Block 4. Financial Annuities

Topic 5. Present value of temporary, perpetual, immediate and deferred annuities

Topic 6. Future value of temporary, perpetual, immediate and deferred annuities

Block 5. Loan Amortization

Topic 7. Amortization systems and amortization schedules

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
theory	32.5	1.3	CM16, CM17, CM18, CM19, KM16, SM11
problems	50	2	CM16, CM17, CM18
study	25	1	CM16, CM17, CM18, CM19, KM16, SM11
tutoring	20	0.8	CM17
practices	17	0.68	CM16, CM17, CM18, CM19, KM16, SM11

The learning activities that will enable students to successfully achieve the course objectives are the following:

1. Lectures

These aim to present the fundamental concepts of the subject, as well as the necessary basic derivations and the areas where students commonly make mistakes in the application of theoretical content.

2. Practical classes

The teaching staff will propose and solve practical problems with student participation, placing special emphasis on identifying and correcting common mistakes.

3. Problem solving by students

Each topic will include a list of problems that students must solve individually. This activity helps consolidate theoretical knowledge and develop skills in solving practical cases. These exercises will be periodically discussed and corrected in practical classes.

4. In-class practical activities

To better monitor student progress, practical in-class activities will be periodically carried out and subsequently corrected and discussed. These activities will be based on the problem sets mentioned above.

5. Multiple-choice tests

To improve calculation speed and numerical accuracy, short multiple-choice tests will be occasionally scheduled.

6. Case study solving

Case studies integrate several concepts from different topics and allow students to approach more complex real-life situations than standard exercises. Towards the end of the course, some case studies will be solved collectively in class, and the final assessment activity will consist of an individual case study.

7. Tutorials

Students have scheduled tutorial hours during which teaching staff will answer both theoretical and practical questions related to the course.

Annotation: within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
Final	50%	2	0.08	CM16, CM17, CM18, CM19, KM16, SM11
Continuous assessment activities	20%	2	0.08	CM17, CM18, CM19, KM16
Partial test	30%	1.5	0.06	CM16, CM18, SM11

In this course, the use of artificial intelligence is strictly prohibited. Any activity in which its use is detected will be graded with a zero.

Assessment is continuous throughout the course and is based on the activities detailed below. Participation in any assessment activity implies that the student will receive a final grade based on the mark obtained.

Assessment will be carried out through the following activities:

1. Partial assessment activity

This will take place on the date established by the Faculty. No course materials may be consulted. The maximum time allowed will be 90 minutes. This test does not exempt students from any course content.

Weight: 30%

1. Continuous assessment activities

These will consist of tests or other activities announced sufficiently in advance. No materials may be consulted, and these activities do not exempt students from any course content.

Weight: 20%

1. Final exam

This will cover all course content and will take place on the date set by the Faculty. No course materials may be consulted during the exam.

Weight: 50%

The final grade will be calculated as the weighted average of the grades obtained in the three activities. The course is passed with a grade equal to or higher than 5.

Resit

Students who obtain a final grade equal to or higher than 3.5 and lower than 5 may sit the resit exam.

The resit exam will be scheduled in the Faculty's official exam calendar. When final grades are published, information regarding the format of the resit exam will be provided.

Students who sit the resit exam and pass it will pass the course with a final grade of 5. Otherwise, they will retain their previous grade.

Students with a grade lower than 3.5 must repeat the course in the following academic year.

"Not assessable" grade

A student who has not participated in any assessment activity will be considered "Not assessable." Consequently, any student who completes any continuous assessment activity may no longer obtain this grade.

Assessment calendar

The dates of the partial exam, final exam, and resit exam will be included in the Faculty's official exam calendar.

The scheduling of assessment activities may only be modified in exceptional and duly justified cases, in accordance with the UAB Academic Regulations. Students who need to request rescheduling must do so following the procedure established by the Faculty of Economics and Business.

Review of grades

Information will be provided regarding the date and means of publication of grades, as well as the procedure, place, date, and time for exam review, in accordance with University regulations.

SINGLE ASSESSMENT

This course offers the single assessment modality.

Applying for single assessment implies waiving continuous assessment and must be processed within the deadlines and according to the procedure established by the Faculty of Economics and Business.

Single assessment will consist of an in-person exam accounting for 100% of the final grade.

The same resit and grade review system as for continuous assessment will apply.

The completion of assessment activities is subject to the provisions set out in this course guide and in the "[Policy of the School of Economics and Business on the Detection of Irregularities during Assessment Activities](#)", which regulates the conditions under which assessment tasks are conducted and the procedures applicable in cases where indications of irregularities are detected. Students are encouraged to consult the policy.

Bibliography

Aguilera Gómez, V. M., & Díaz Mata, A. (2020). **Matemáticas financieras** (6.ª ed.). McGraw-Hill Interamericana.

Brun, X., Elvira, O., & Puig, X. (2008). *Matemàtica financera i estadística bàsica*. Profit.

Cruz, S., & Valls, M. M. (2008). *Introducción a las matemáticas financieras*. Pirámide.

Machín Moreno, M. (2012). *Introducción a las matemáticas financieras*. UDIMA.

Matias, R., & Seijas, J. A. (2009). *Matemática financiera*. Escolar Editora.

Miner, J. (2005). *Matemática financiera*. McGraw-Hill.

Navarro, E. (2019). *Matemáticas de las operaciones financieras*. Pirámide.

Navarro, E., & Nave, J. M. (2001). *Fundamentos de matemáticas financieras*. Antoni Bosch.

Sanou, L., Villazón, C., & Celma, J. (2001a). *Pràctiques de matemàtica financera* (Vol. I, núm. 102). Servei de Publicacions, Universitat Autònoma de Barcelona.

Sanou, L., Villazón, C., & Celma, J. (2001b). *Pràctiques de matemàtica financera* (Vol. II, núm. 103). Servei de Publicacions, Universitat Autònoma de Barcelona.

Sanou, L., Villazón, C., & Celma, J. (2001c). *Pràctiques de matemàtica financera* (Vol. III, núm. 104). Servei de Publicacions, Universitat Autònoma de Barcelona.

Torre, A. (2024). ***Matemáticas financieras: Aplicaciones usando Excel***. Marcombo.

Software

Excel Sheet

Moodle tests

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(TE) Theory	10	Catalan	first semester	morning-mixed
(TE) Theory	50	Catalan	first semester	afternoon
(PAUL) Classroom practices	101	Catalan	first semester	morning-mixed
(PAUL) Classroom practices	501	Catalan	first semester	afternoon