

## Financial Engineering

Master's degree in: Financial Management

Subject: Financial strategy

Credits: 6 ECTS

Program: Master in Finance

Modality: On-campus Full-Time

Semester: First

Type: Mandatory

Language of instruction: English

Academic year: 2025/2026

## Index

1. Presentation .....	3
2. Program's learning outcomes.....	3
2.1. Knowledge.....	3
2.2. Skills .....	3
2.3. Competencies.....	4
3. Subject's learning outcomes .....	4
4. Contents .....	5
5. Methodology .....	5
6. Grading system .....	6
7. Bibliography.....	8

## 1. Presentation

This course is specifically designed to provide you with a profound insight and an all-encompassing introduction to quantitative methods and essential financial tools, which are indispensable for gaining a comprehensive understanding of financial markets. Our journey commences with the fundamentals, as we explore the concept of the time value of money. By unraveling this key concept, you will grasp the significance of present and future cash flows in determining the true value of financial assets. As we progress, we delve into the realm of spot and forward rates, equipping you with the essential knowledge required to value bonds and derivative instruments. You will also understand to measure interest rate risk and learn how to apply these measures effectively in portfolio immunization strategies.

## 2. Program's learning outcomes

The subject-related learning outcomes are distributed as follows:

### 2.1. Knowledge

- RAT 1 The graduate will be able to provide a strategic vision of the implementation of procedures and work systems in a financial context by means of project-based learning and real case studies.
- RAT 3 The graduate will be able to identify effectively challenging situations in the financial management of organizations by means of real case studies.
- RAT 4 The graduate will be able to understand financial management policies in the organizational environment through cooperative and group learning techniques.

### 2.2. Skills

- RAT 5 The graduate will be able to provide clear and precise explanations of any knowledge/information, both orally and in writing, in Catalan, Spanish and a third language, particularly English.
- RAT 6 The graduate will be able to apply digital technologies (at the right time) in his/her field of expertise.

- RAT 7 The graduate will apply correctly quantitative diagnosis and control techniques in the company's financial planning, managing advanced models of scorecards and strategic analysis.
- RAT 8 The graduate will be able to apply information and data in a proper way in order to identify problems and make financial decisions in the company.
- RAT 9 The graduate will be able to develop interpersonal skills that enable negotiation in financial environments, by means of gamification techniques and role-plays.
- RAT 10 The graduate will be able to scheduling tools (chronograms, Pert diagrams, etc.) to improve personal and team effectiveness in a financial department.
- RAT 12 The graduate will apply diagnosis, valuation, planning and financial control techniques to business organizations in a creative and entrepreneurial way.
- RAT 13 The graduate will be able to solve in a proper way the optimization of financial risk through derivative financial products.

### 2.3. Competencies

- RAT 16 The graduate will be able to provide innovative, creative and entrepreneurial solutions in professional situations.
- RAT 17 The graduate will be able to evaluate the sustainability and social impact of the proposals presented, with ethical, environmental and professional responsibility.
- RAT 18 The graduate will be able to apply the gender perspective in the professional tasks.
- RAT 19 The graduate, after completing the Master, will be able to design financial products correctly in response to changes in the financial market.
- RAT 20 The graduate will be able to assess the economic-financial situation of the company in order to monitor its evolution.
- RAT 22 The graduate will be able to make an adequate evaluation of the different investment alternatives in the company's context and make an optimal allocation of resources.
- RAT 25 The graduate will be able to conduct an effective analysis of the impact of qualitative variables on business organizations, necessary for asset valuation, investment selection, financing sources, financial policies or financial markets.

## 3. Subject's learning outcomes

The subject-based learning outcomes for this course are as follows:

- RAM 2 The graduate is able to accurately describe the principles of the most established ethical code in the financial industry through a written exam.
- RAM 4 The graduate will be able to effectively develop interpersonal skills in the context of the financial function of a business through challenge-based learning.
- RAM 5 The graduate will be able to accurately review the fundamental concepts related to current business affairs in order to gain a broad understanding of the economic reality affecting companies through the analysis of practical exercises.

## 4. Contents

- **Topic 1 - The time value of money**
  - Simple interest and compound interest. APR versus APY
  - The present and future values of a single cash flow.
  - The present and future values of a series of cash flows.
  - Applications to stock valuation and to bond valuation.
  
- **Topic 2 – Interest rates in fixed income markets**
  - Spot and forward rates
  - Term structure of interest rates: explanatory theories.
  
- **Topic 3 – Quantification of interest rate risk**
  - Duration and modified duration
  - Convexity
  
- **Topic 4 – Valuing financial assets methods.**
  - Continuous-time option pricing.
  - Option Greeks
  - Volatility smiles and Monte Carlo simulation.

## 5. Methodology



- Two group projects or reports. 10% each.

Block 2 will consist of:

- Participation and oral presentations – 20%.

Block 3 will consist of:

- An exam - 40%.

The final grade for the course will be obtained by weighting the three blocks. The minimum weighted grade required to pass is 5.0.

If the student fails Block 1 or Block 3 (or both) with a grade lower than 5.0, they may retake that block or blocks. This grade will average with the other blocks, and the maximum final grade the student can receive is 5.0.

If the student is unable to attend the initial evaluation, and can provide a justified reason (see regulations of the University of Lleida), they may take the exam on the date set for recovery.

Students who do not attend evaluative activities with a weight exceeding 50% will receive a general course grade of “Not presented.”

#### Alternative Evaluation

The single evaluation consists of a single exam that accounts for 100% of the course. The exam, and therefore the course, is passed with a grade of 5 out of 10 in this final test. If a grade lower than 5.0 is obtained, the student has the right to a recovery exam.

To opt for the single evaluation, it is necessary to send a written request to the coordination during the first 15 business days of the course. The procedure to follow to opt for this single evaluation is established in the specific rules of EAE.

Plagiarism is a fraudulent activity that can lead to severe penalties, both academic and legal. Academic honesty is one of the pillars of the educational commitment of the School, and the members of its teaching community are especially aware and prepared to detect such actions. Given the difficulty often involved in conceptualizing plagiarism, it has been deemed appropriate to clearly define its content and scope in these regulations and policies.

Plagiarism is understood as the appropriation of works or other people's work by passing them off as one's own; that is, without explicitly crediting their origin. Plagiarism can consist of the unauthorized total or partial copying of someone else's work, or presenting the copy as an original work, impersonating the true author. Some examples of plagiarism are:

- Submitting someone else's work as if it were your own, regardless of whether the copy is total or partial.
- Paraphrasing a text by rephrasing it with other words, but making small changes in the language to disguise it and without citing sources.
- Buying or obtaining a work and presenting it as one's own.

- Relying on an idea or phrase from another person to write a new paper without citing the author of the work.

As established in Article 10 of the Academic Code of Conduct for Students at EAE Barcelona, without prejudice to the academic sanctions resulting from its application, the Academic Commission will promote the legal actions that correspond in case plagiarism could violate applicable regulations regarding intellectual property.

## 7. Bibliography

- DeFusco, R. A. (2007). Quantitative investment analysis (2nd ed.; R. A. DeFusco, ed.)- Hoboken, N.J: Wiley.
- Fabozzi, F. J. (2002). Interest rate, term structure, and valuation modeling (F. J. Fabozzi, ed.). Hoboken, N.J: Wiley.
- Hull, J. (2012). Risk Management and Financial Institutions. 3rd edition, Hoboken, N.J. Wiley.
- Malkiel, B. G. (2015). The term structure of interest rates: Expectations and behavior patterns. Princeton, N.J.: Princeton University Press.
- Van Horne, J. C. (2001). Financial market rates and flows (6th ed.). Englewood Cliffs: Prentice-Hall.
- DeFusco, R. A. (2007). Quantitative investment analysis (2nd ed.; R. A. DeFusco, ed.)- Hoboken, N.J: Wiley.
- Van Horne, J. C. (2001). Financial market rates and flows (6th ed.). Englewood Cliffs: Prentice-Hall.