

## Risk analysis and portfolio management

Master's degree in: Financial Management

Subject: Risk management

Credits: 6 ECTS

Program: Master in Finance

Modality: On-campus Full-Time

Semester: First

Type: Mandatory

Language of instruction: English

Academic year: 2025/2026

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## 1. Presentation

Over the past few years, the Financial System has been characterized by globalization and market liberalization. Furthermore, events of various natures, mainly technological, have led to a significant increase in the volatility of interest rates, stock markets, currencies, and commodities.

For companies, this growing instability has resulted in a substantial increase in their exposure to financial risk. That's why proper risk management is a fundamental aspect of modern financial management.

Throughout the course, we will focus on acquiring the necessary knowledge to design and build an investment portfolio that maximizes the risk-return trade-off, using sustainable investment criteria, and assessing the different risks we may encounter.

## 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 2 The graduate will be able to identify correctly the financial function of business organizations by means of problem-based learning and 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.

### 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 11 The graduate will know how to use correctly financial skills and knowledge necessary for the minimization of business risk.
- RAT 13 The graduate will be able to solve in a proper way the optimization of financial risk through derivative financial products.
- RAT 14 The graduate will be able to apply correctly the fundamentals of financial risk assessment in the elaboration and execution of the company's action plans

### 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 21 The graduate will be able to effectively analyze the impact of qualitative and quantitative variables of the financial environment on business organizations.
- 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 23 The graduate will be able to propose the most suitable financing options according to the company's needs and possibilities.
- RAT 24 The graduate will be able to propose the most suitable financing options according to the company's needs and possibilities.
- 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 1 The graduate will be able to precisely design the optimization of financial risk through the products traded in different financial markets, using methodologies for their valuation and risk metrics
- RAM 2 The graduate will be able to accurately measure the risks undertaken by the company in the development of its international business activities through the presentation of specific cases related to the business operations.
- RAM 3 The graduate will be able to accurately design an appropriate financial risk management policy in a dynamic, flexible, and constantly changing environment through simulation exercises of evolving business situations.
- RAM 5 The graduate will be able to correctly evaluate the results of an investment or portfolio in terms of return-risk and use the yield curve.

## 4. Contents

- **Topic 1 - Introduction to Risk Analysis and Portfolio Management**
  - Definition and fundamentals of financial risk analysis.
  - Types of risk: operational, market, country.
  - The relationship between risk and return in portfolio management.
- **Topic 2 - Investment Valuation and Sustainable Investment Criteria**
  - Valuation of financial assets: methods and tools.
  - ESG criteria (environmental, social, and governance) in investment valuation.
  - Integration of sustainability into investment portfolios.
  - Evaluation of sustainable and responsible projects
- **Topic 3 - Automated Asset Management**
  - Definition of automated portfolio management (Robo-advisors)
  - Principles and algorithms of robo-advisors
  - Advantages and disadvantages of automation in asset management
  - Applications of artificial intelligence and machine learning in portfolio management
- **Topic 4 - Operational, Market, and Country Risk**
  - Analysis of operational risk: causes and mitigation
  - Market risk: types and factors affecting financial markets
  - Country risk: definition and evaluation of political and economic risk in international investments

- Risk hedging and mitigation strategies
- **Topic 5 - Financial and Operational Risk Models**
  - Financial risk valuation models (Value at Risk, sensitivity analysis, etc.)
  - Operational risk models: identification and management.
  - Quantitative and qualitative methods for assessing risk in investment portfolios
- **Topic 6 - Variance and Covariance. Standard Deviation**
  - Fundamentals of variance and covariance in portfolio analysis
  - Standard deviation as a measure of risk
  - Application of these metrics in the construction of efficient portfolios
  - Calculation and interpretation of variance and covariance in investment portfolios
- **Topic 7 - Modern Portfolio Theory**
  - Fundamental principles of modern portfolio theory (Harry Markowitz)
  - Portfolio diversification and risk reduction
  - Calculation of the efficient frontier
  - The relationship between risk and return in portfolio theory
  - Practical application of modern portfolio theory in investment management
- **Topic 8 - Risk-Adjusted Return Measures**
  - Traditional return measures (absolute return, annualized return)
  - Risk-adjusted measures: Sharpe, Treynor, and Jensen.
  - Portfolio evaluation using risk-adjusted metrics.
  - Comparison of portfolios and optimization of investment decisions
- **Topic 9 - Investment Funds**
  - Types of investment funds (fixed income, equity, mixed, sustainable, etc.)
  - Analysis and selection of investment funds
  - Investment strategies in funds: active management vs. passive management
  - Evaluation of the performance and risks of investment funds
  - Regulation and transparency in investment funds

## 5. Methodology

The methodology applied to this subject, framed within the educational model of EAE Business School, LifEd, is detailed in the following table:



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

- Essentials of Investments, 12th Edition By Zvi Bodie, Alex Kane and Alan Marcus. McGraw Hill, 2022. ISBN10: 1260772160 | ISBN13: 9781260772166
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- Zouari-Hadji, R. (2023). Financial innovation characteristics and banking performance: The mediating effect of risk management. International Journal of Finance & Economics, 28(2), 1214-1227.