Universidad de Navarra

Finance II (MEF)

Guía docente 2026-27

PRESENTACIÓN

Breve descripción: This module starts with an analysis of forwards and futures contracts and their use as hedging tools. Besides the two previous derivatives markets, the module relies on the options valuation and their use to hedge risks. Thus, the chapter dedicated to options includes theoretical and practical content on the CRR model for European-type options plus the Black-Scholes formula as the limit to the CRR model and on the "Greeks" and their application to hedging. After a detailed study of derivatives used for hedging, the course continues with a discussion of the basic definition of the pricing kernel and its role in the specification of risk prices and of the change of measure framework. The discussion is then focused on risk management: (*i*) the measure of financial risk within a firm or investment portfolio through the value at risk (VaR), (*ii*) the measure of systemic risk through the CoVaR. The module ends with a detailed analysis of more advanced computational models like the Longstaff Schwartz approach to derivatives pricing and its applications in Python.

- **Titulación**: Master in Economics and Finance
- **Módulo/Materia**: Module I/Matter 1.2 Finance
- **ECTS**: 3,5 (90 hours of work, approximately)
- **Curso, semestre**: Spring, 2023/2024
- **Carácter**:
- **Profesorado**: Claudio Tebaldi y Marina Di Giacinto
- **Idioma**: English
- **Aula, Horario**: Schedule on Web (link to the web)

RESULTADOS DE APRENDIZAJE (Competencias)

GENERAL COMPETENCIES

CG1) Train high-level specialists in both economic theory and finance.

CG2) Provide students with the appropriate and necessary mathematical and econometric techniques for both theoretical and empirical work in the fields of economic theory and finance.

CG3) Familiarize students with research fields and the most relevant literature in economic theory and finance.

CG4) Develop students' critical capacity towards economic or financial phenomena and enhance their communication skills.

CG5) Provide students with the basic theoretical foundations to start doctoral studies in economics or finance.

SPECIFIC COMPETENCIES

CE4) Handle the main statistical and econometric programs used in the areas of economics and finance.

CE6) Understand the foundations of modern financial theory through discrete-time models examining the decision-making process under uncertainty in an intertemporal framework, mean-variance theory, arbitrage theory, and the incorporation of information in the decision-making process.

CE7) Examine the concept of market risk using models for its assessment.

PROGRAMA

- Forward and future contracts

  1. Introduction
  2. Pricing of forward and future contracts
  3. Speculation and hedging with forwards and futures

- The fundamental theorem of asset pricing

  1. Valuation by replication
  2. Definition of the risk-neutral measure
  3. The relation between the pricing kernel and the marginal utility of the representative investor

- How traders manage their exposure using options (Greek letters)

  1. Option Strategies
  2. Cox-Ross-Rubinstein model
  3. Black-Scholes model in continuous time. Derivation of the PDE
  4. Black and Scholes formula
  5. Greek letters

- Risk measures

  1. Volatility and Risk
  2. Value at Risk (VaR): Introduction
  3. VaR vs Expected Shortfall (ES)
  4. Coherent risk measures

- Credit Risk

  1. Historical default probabilities
  2. The Modigliani-Miller Theorem and the Merton structural valuation model

- The Longstaff-Schwartz valuation approach

ACTIVIDADES FORMATIVAS

The teaching activities are organized as a blend of face-lectures (50%) and problem solving (50%) activities. Students are invited to interact with the teaching team in order to improve their hard and soft skills. The final written exam is closed book. Students are required to complete a written test that is designed like a job market interview on the topics that have been discussed. In this way it is possible to assess their ability to frame properly methodological, operational, legal and quantitative aspects of the problems at hand.

EVALUACIÓN

CONVOCATORIA ORDINARIA

- Problem Solving Sessions (30%)
- Final Written Exam (70%)

CONVOCATORIA EXTRAORDINARIA

HORARIOS DE ATENCIÓN

- Contact by e-mail and appointment

BIBLIOGRAFÍA

Mandatory

- Slides John Hull Options, Futures, and Other Derivatives 10th Edition
- Hull, John. Options, Futures, and Other Derivatives, 7th Edition. Find this book in the Library

Optional

- Favero, Carlo and Claudio Tebaldi (2024). Lectures on the Theory and Application of Modern Finance with R and ChatGPT.
- Cox, John C. and Mark Rubinstein (1985) Options Markets, Prentice Hall. Find this book in the Library. Find this book in the Library.
- Caouette, John B., Altman, Edward B., Narayanan, Paul and Robert Nimmo (2008). Managing Credit Risk, John Wiley & Sons; 2nd edition. Find this book in the Library.
- Elizondo, Alan and Edward I. Altman (2004). Medición Integral del Riesgo del Crédito, Limusa. Find this book in the Library.
- de Lara Haro, Alfonso (2004). Medición y control de riesgos financieros, Limusa; Tercera Edición. Find this book in the Library.
- Lewis, Nigel Da Costa (2004). Operational Risk with Excel and VBA, John Wiley & Sons. Find this book in the Library.
- Leonard, and Peter Neu (2007). Liquidity Risk, Wiley. Find this book in the Library.
- Saunders, Anthony (2006). Financial Institutions Management, McGraw-Hill/Irwin; 5th edition. Find this book in the Library.