Universidad de Navarra

Topics in Economics and Finance VI (MEF)

Guía docente 2026-27

PRESENTACIÓN

Breve descripción: With financial markets increasingly embracing quantitative and algorithmic approaches, our course will delve into the prominent methods wielded by leading institutions such as banks, hedge funds, investment firms and professional traders in recent years. We will dissect their methodologies offering a holistic understanding of the process, from generating an idea to data management, model choice, testing and implementing the strategies.

The rise of quantitative models and automation for analysing and trading securities, portfolio management and advisory services coupled with an unprecedented surge in data availability, computational power, and advanced analytical tools, exemplifies this transformative wave. A growing demand for knowledge on these areas is observed from both institutions, seeking individuals with a quantitative background or an understanding of applied quantitative finance, and employees, who recognize the necessity for such skills to thrive in the competitive job market in Finance.

Our program tries to equip students with the knowledge to navigate this evolving landscape. While we won't delve into intricate mathematics or computer code, we will comprehensively discuss and illustrate concepts, occasionally referring to mathematical or statistical expressions and code snippets to provide context and specific examples.

- **Titulación**: Master in Economics and Finance
- **Módulo/Materia**: Module II/Matter: 2.1 Topics in Economics and Finance
- **ECTS**: 3.5 (87.5 hours of work)
- **Curso, semestre**: Spring, 2023/2024
- **Carácter**:
- **Profesorado**: Dr. José Suárez-Lledó and Gerard Sánchez
- **Idioma**: English
- **Aula, Horario**: See MEF's class schedule (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

CE1) Study the main concepts and techniques of mathematical analysis, probability, and statistics required in the areas of economics and finance.

CE3) Appropriately use econometric techniques employed in the analysis of microeconomic data and in the analysis and modeling of financial time series.

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

PROGRAMA

Part 1- Python for Financial Markets Analysis (Gerard Sánchez)

1. Introduction to Python

2. Numpy + Pandas

3. Time Series OHLC data / Structured Data

4. Market Analysis: return distributions and asset dynamics

5. Technical Analysis I

6. Portfolio and Performance Metrics

7. Backtesting

Part 2 – Quantitative Investment Strategies (Dr. José Suárez-Lledó)

1. Logistic Regressions with Macro Factors & Probabilistic Weighting

2. Market Cycles for Factor & Sector Timing

3. Technical Analysis

4. Statistical Arbitrage

5. Long-Short Portfolios

6. Machine Learning

7. Risk Management

ACTIVIDADES FORMATIVAS

Sessions will include some theoretical discussion of concepts and ideas, but they will be predominantly empirical and applied. Work will be conducted as in a research team within a real investment institution. Topics or ideas will be presented and analysed/discussed/challenged with the rest of the class. Students will also work in groups to retrieve data and analyse concepts; or develop, implement and test their ideas. Class dynamics will also involve presenting their results and brainstorming for improvements on strategies/ideas. Time will also be devoted to interpreting relevant market news and shaping that into investment ideas. Material that may be needed will be provided (articles, references to books, websites, …)

EVALUACIÓN

Competencies in Python (15%)

Project on Strategies (individually or in groups) (25%)

Exam (60%)

Make-up call (in case the student fails the class)

- If a student fail the class, he/she will have a re-take project to submit (100%), and the final grade for the course will be in line with the botton 20% from the first call.

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HORARIOS DE ATENCIÓN

- By email

BIBLIOGRAFÍA

Popular science books on investment, finance, strategies and stories on quant funds:

1. "Hedge Fund Market Wizards: How Winning Traders Win" by Jack Schwager

2. "The New Market Wizards: Conversations with America's Top Traders" by Jack Schwager

3. "Unknown Market Wizards: The Best Traders you Have Ever Heard of" by Jack Schwager

4. "The Quants: How a New Breed of Math Wizzes Conquered Wall Street and Nearly Destroyed it" by Scott Patterson

5."The Man Who Solved the Markets: How Jim Simons Launched the Quant Revolution" by Gregory Zuckerman

6. "Mastering the Market Cycle: Getting the Odds on Your Side" by Howard Marks

7. "Inside the House of Money: Top Hedge Fund Traders on Profiting in the Global Markets" by Steven Drobny and Niall Ferguson

8. "The Invisible Hands: Top Hedge Fund Traders on Bubbles, Crashes and Real Money" by Steven Drobny, Nouriel Roubini and Jared Diamond

9. "The Alpha Masters: Unlocking the Genius of the World's Top Hedge Funds" by Maneet Ahuja

10. "Inside the Black Box: The Simple Truth about Quantitative Trading" by Rishi Narang

11. "Keeping Up with the Quants: your Guide to Understanding and Using Analytics" by Thomas Davenport and Jinho Kim

On quantitative investing, portfolio Management and financial markets in general:

o Cain and Connors; The Alpha Formula, Connors Research

o Carver, R.; Systematic Trading

o Kakushadze and Serur; 151 Trading Strategies

o Fabozzi and Markowitz; The Theory and Practice of Investment Mangement, Wiley

o Ang, A.; Asset Management: a Systemic Approach to Factor Investing, Oxford

o Stewart S., Piros C., Heisler J.; Running Money, McGraw Hill

o Grinold and Kahn; Active Portfolio Management, McGraw-Hill

o Fabozzi, Focardi, Rachev, and Arshanapalli; The Basics of Financial Econometrics, Wiley

o Ilmanen; Expected Returns, Wiley

o Kula G., Raab M., Stahn S.; Beyond Smart Beta, Wiley Finance

o Sironi, P.; Modern Portfolio Management: from Markowitz to Probabilistic Scenario Optimization, Risk Books

On algorithmic trading/strategies:

o Chan E.; Quantitative Trading: How to Build your Own Algorithmic Trading Business, Wiley

o Chan E.; Algorithmic Trading: Winning Strategies and their Rationale, Wiley

o Chan E.; Machine Trading, Wiley

o Cain and Connors; The Alpha Formula, Connors Research

o Carver, R.; Systematic Trading

o Kakushadze and Serur; 151 Trading Strategies

On Machine Learning and its applications in Finance:

o Guida, T.; Big Data and Machine Learning in Quantitative Investment, Wiley

o James, Witten, Hastie, Tibshirani, Taylor; An Introduction to Statistical Learning with applications in Python

o Hastie, Tibshirani, Friedman; The Elements of Statistical Learning, Springer

o Tatsat H, Puri S, Lookabaugh B,; Machine Learning & Data Science Blueprints for Finance: from building trading strategies to Robo-Advisors using Python, O'Reilly

Jansen, S.: Machine Learning for Algorithmic Trading, Packt