



# UNIVERSITÀ DI PAVIA

Anno Accademico 2022/2023

## FINANCIAL ECONOMETRICS

<b>Anno immatricolazione</b>	2021/2022
<b>Anno offerta</b>	2022/2023
<b>Normativa</b>	DM270
<b>SSD</b>	SECS-S/06 (METODI MATEMATICI DELL'ECONOMIA E DELLE SCIENZE ATTUARIALI E FINANZIARIE)
<b>Dipartimento</b>	DIPARTIMENTO DI MATEMATICA 'FELICE CASORATI'
<b>Corso di studio</b>	MATEMATICA
<b>Curriculum</b>	PERCORSO COMUNE
<b>Anno di corso</b>	2°
<b>Periodo didattico</b>	Primo Semestre (29/09/2022 - 13/01/2023)
<b>Crediti</b>	6
<b>Ore</b>	44 ore di attività frontale
<b>Lingua insegnamento</b>	English
<b>Tipo esame</b>	SCRITTO
<b>Docente</b>	ROSSI EDUARDO (titolare) - 7 CFU TRAPANI LORENZO - 2 CFU
<b>Prerequisiti</b>	The course is meant to deepen the technical knowledge of the econometric methods used in the analysis of financial markets. Necessary prerequisites are econometrics, statistics and mathematical finance.
<b>Obiettivi formativi</b>	The objective of this course is to provide a comprehensive and systematic account of financial econometric models and their applications to modeling and prediction of financial time series data, focusing on asset returns and volatilities. The students will learn the analytical tools needed for the specification and estimation of econometric models with financial data. Students at the end of the course will have a working knowledge of financial time series data and gain expertise in the software to conduct the analyses.



## Introduction to MATLAB

1. Finite difference equations. Solutions and stability. Stationarity and ergodicity
  2. ARMA models: Stationarity, invertibility, forecasting
  3. Maximum likelihood estimation of ARMA models
  4. VAR: representation and estimation
  5. Stochastic trends and deterministic trends. Unit root testing
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2. Empirical asset pricing models: Generalized method of moments (GMM)
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3. Volatility of financial returns: models, estimation, forecasting
    - (a) Introduction
    - (b) Univariate GARCH models (T, 8,9,10)
    - (c) Multivariate GARCH models
    - (d) Stochastic volatility models
    - (e) Nonparametric estimation of volatility with high-frequency data



## Frontal lessons



Hamilton J. (1994), Time Series Analysis, Princeton University Press.  
Taylor S.J. (2005) Asset Prices Dynamics, volatility, and prediction,  
Princeton University Press.  
Singleton K. (2006) Empirical Dynamic Asset Pricing, Princeton  
University Press.





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## Altre informazioni

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High quality education

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