

# Syllabus

## *Descrizione corso*

<b>Titolo insegnamento</b>	Financial econometrics
<b>Codice insegnamento</b>	27505
<b>Titolo aggiuntivo</b>	
<b>Settore Scientifico-Disciplinare</b>	SECS-P/05
<b>Lingua</b>	Inglese
<b>Corso di Studio</b>	Corso di laurea magistrale in Data Analytics for Economics and Management
<b>Altri Corsi di Studio (mutuati)</b>	Loaned from course 25423 – Master in Accounting and Finance (LM-77 AF)
<b>Docenti</b>	prof. Francesco Ravazzolo, Francesco.Ravazzolo@unibz.it <a href="https://www.unibz.it/en/faculties/economics-management/academic-staff/person/36066">https://www.unibz.it/en/faculties/economics-management/academic-staff/person/36066</a>
<b>Assistente</b>	
<b>Semestre</b>	Primo semestre
<b>Anno/i di corso</b>	1
<b>CFU</b>	6
<b>Ore didattica frontale</b>	36
<b>Ore di laboratorio</b>	-
<b>Ore di studio individuale</b>	-
<b>Ore di ricevimento previste</b>	18
<b>Sintesi contenuti</b>	This work provides an introduction to the fundamentals of financial econometrics, bridging theoretical concepts with practical applications. We begin with the foundational principles of stochastic processes and the characteristics of financial assets, including an analysis of empirical "stylized" facts observed in financial data. The subsequent sections delve into various models for forecasting returns, such as Classical Linear Regression and Time-Series Analysis (e.g., ARMA models), as well as models specifically designed for volatility analysis and prediction, including

	ARCH and GARCH models. The text also covers macro-finance analysis, introduces Bayesian methods and Monte Carlo simulations, and explores special topics like cryptocurrency, energy markets, and bond markets.
<b>Argomenti dell'insegnamento</b>	The course covers the tools of financial econometrics and empirical finance, with the focus on correlation analysis, classical linear regression and advanced time-series analysis. It introduces econometric modelling of financial prices and volatility, and estimation of some risk measures. Then, it extends to macro-finance problems. Strong emphasis is placed on the application of the models to real financial data.
<b>Parole chiave</b>	Stochastic Processes, Financial Time-Series Analysis, Volatility Modeling (ARCH/GARCH), Forecasting, Bayesian Analysis
<b>Prerequisiti</b>	Basic knowledge of statistics
<b>Insegnamenti propedeutici</b>	
<b>Modalità di insegnamento</b>	The course will combine in-class explanation of the background material, problem-solving and case discussions. Students will be expected to participate actively in class work, which will give them the opportunity to apply theoretical concepts to realistic situations.
<b>Obbligo di frequenza</b>	Strongly recommended, but not required.
<b>Obiettivi formativi specifici e risultati di apprendimento attesi</b>	
<b>Obiettivi formativi specifici e risultati di apprendimento attesi (ulteriori info.)</b>	Ability to perform all the mentioned econometric techniques by using appropriate software (MATLAB, PYTHON, R).
<b>Modalità di esame</b>	<p>Final Exam (50%):</p> <p>The final exam is a combination of problems, cases, and essay questions.</p> <p>Optional assignment (50%):</p> <p>Case studies will be assigned during the semester to be completed in writing and presented in class by groups of students.</p> <p>The questions included in the final exam are aimed at assessing the acquisition of knowledge and understanding the ability to apply them to new situations as well as to evaluate the skill of the student to analyse and report on complex business transactions.</p> <p>The case studies also measure the student's capability to search for the relevant regulatory and economic information that apply to</p>

	<p>a specific situation.</p> <p>If a student does not complete the assignment, the exam will weight 100%.</p>
<b>Criteri di valutazione</b>	<p>Final exam: 50%</p> <p>Assignment: 50%</p> <p>The student must pass the exam to have a passing grade in the course.</p>
<b>Bibliografia obbligatoria</b>	<p>Selection of papers provided by the teacher.</p>
<b>Bibliografia facoltativa</b>	<p>CFA Institute Curriculum 2018 edition, Level II, Readings 9-11.</p> <p>Koop G. (2003). Bayesian Econometrics. Wiley.</p> <p>Stock J.M. and Mark W. Watson, <i>Introduction to Econometrics</i>. Pearson International 3rd Edition.</p> <p>Diebold F. X. (2006). Elements of Forecasting. Mason 4th Edition.</p>
<b>Altre informazioni</b>	
<b>Obiettivi di Sviluppo Sostenibile (SDGs)</b>	<p>Istruzione di qualità, Parità di genere, Energia rinnovabile e accessibile, Lotta contro il cambiamento climatico, Ridurre le disuguaglianze, Utilizzo responsabile delle risorse, Buona occupazione e crescita economica</p>