

COURSE OF STUDY ECONOMICS, FINANCE & MANAGEMENT

ACADEMIC YEAR 2024-2025

ACADEMIC SUBJECT Statistica modeling for financial data

General information	
Year of the course	2023/2024
Academic calendar (starting and ending date)	february 2024 - june 2024
Credits (CFU/ETCS):	6
SSD	S-01
Language	italian
Mode of attendance	In-person teaching

Professor/ Lecturer	
Name and Surname	Nicola Novielli
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Department and address	Università degli Studi di Bari - Facoltà di Economia Largo Abbazia Santa Scolastica, 53, 70125 Bari BA
Virtual room	
Office Hours (and modalities: e.g., by appointment, on line, etc.)	By appointment

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
150	21	21	108
CFU/ETCS			
6	3	3	

Learning Objectives	To develop skills in statistical analysis of financial returns data throughout the use of R statistical software.
Course prerequisites	Preferably the student will have gained basic knowledge of statistical inference and calculus of probability.

Teaching strategie	In-person lectures, courseworks on real data
Expected learning outcomes in terms of	By the end of the course, students will be able to recognize the different types of financial assets and to calculate their returns; to recognize and to interpret the meaning of volatility of financial assets as a measure of risk; learn how to use R-project statistical analysis software to analyze data referring to time series of financial asset returns; and finally, building an analysis report of data from those available online on financial portals.
Knowledge and understanding on:	○
Applying knowledge and understanding on:	○
Soft skills	○

Syllabus	
Content knowledge	<ul style="list-style-type: none"> - Representation and Properties of Financial Data; - Introduction to the use of R software for financial data analysis: installation, packages, graphical representation, creation of objects, functions and loops, data import; - Main statistical distributions for returns and their moments; - Volatility analysis: <ul style="list-style-type: none"> - Models for volatility o ARCH models: properties, advantages; - Model specification, examples and financial applications; - GARCH models: specification and estimation of models; - Other types of GARCH models: IGARCH, GARCH-M, exponential GARCH; - Symmetry and asymmetry, procedures for testing asymmetric effects; - Hints on Stochastic Models for Volatility; - Alternative approaches to volatility analysis (use of high-frequency data; opening, closing prices); - Applications of the volatility models covered.
Texts and readings	R.S. Tsay (2013) An Introduction to Analysis of Financial Data with R, Wiley Ed. [Capitoli I, 4 e 5].
Notes, additional materials	
Repository	Handouts may be provided by the lecturer.

Assessment	
Assessment methods	Students will take an oral test on the topics covered in the reference text or, alternatively, on the topics covered in a statistical analysis report (coursework) composed by the student during the course with the support of the lecturer. In the latter case, both the report and the oral test will contribute equally to the final grade.
Assessment criteria	<ul style="list-style-type: none"> o Knowledge and understanding of the topics covered and the ability to apply knowledge to real data will be assessed.
Final exam and grading criteria	The exam is considered passed with a grade of 18 or higher. The scale of grades will vary between 18 for those who have developed sufficient but general knowledge, and 30 (possibly with honors) for those who have developed extensive knowledge and thorough analytical skills and ranging capacity.
Further information	
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