UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	
ACADEMIC YEAR	
ANNO ACCADEMICO EROGAZIONE	
SUBJECT	
CODE	
SCIENTIFIC SECTOR(S)	
HEAD PROFESSOR(S)	VASSALLO ERASMO Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	
TERM (SEMESTER)	
ATTENDANCE	
EVALUATION	
TEACHER OFFICE HOURS	**VASSALLO ERASMO** Monday 14:30 15:30 Ufficio docente o da remoto via Teams Tuesday 14:30 15:30 Ufficio docente o da remoto via Teams

PREREQUISITES	The course requires knowledge of inferential statistics, statistical modeling and programming in R. A basic knowledge of SAS and Python is also particularly useful.
LEARNING OUTCOMES	Knowledge and understanding. Acquire: 1. Statistical tools and techniques useful for the analysis of financial phenomena as well as for their measurement, estimate and interpretation with the use of appropriate calculation and analysis software; 2. Understanding the evolution of the financial phenomenon and research into statistical sources of data useful for in-depth analysis and interpretation. 3. Skills in the use of electronic spreadsheets, statistical and econometric software and writing skills of some processing scripts on R. Ability to apply knowledge and understanding. Be able to: independently use statistical tools to answer financial analysis questions and modeling and forecasting short- and long-term dynamics, also making use of the free software indicated. Autonomy of judgement. Be able to: identify the application conditions of the proposed instrumentation, correctly read the results obtained and evaluate their implications for the purposes of analyzing the financial markets. Communication skills. Be able to: expose the conditions, tools and results of the analyzes even to a non-expert audience both through oral presentation and by preparing appropriate written reports. Learning ability. Be able to: consult official statistical publications from Istat, OECD, Eurostat, Bank of Italy, Borsa Italiana, etc. and scientific publications specific to the sector through analysis of the relevant national and international literature.
ASSESSMENT METHODS	Written test and oral test. The written test focuses on the practical and interpretative ability to solve a financial statistics problem, usually with the use of a statistical model for time series or cross-section series. The written test lasts about an hour and is structured so that the student can successfully use different and alternative analysis strategies. In particular, the student must focus on the meaning and interpretation of the data and the result obtained. The oral test addresses all the topics of the syllabus in detail with the possibility of providing, during the same exam, mathematical and statistical demonstrations or solving short exercises. The oral test lasts about half an hour. The student's evaluation takes into account: knowledge of concepts and topics, ability to apply them, properties of statistical language in both the written and oral tests. Each of these dimensions is given a rating between: absent, poor, sufficient, good, excellent. The minimum rating of 18 is given in the case of sufficient knowledge of the topics, while the maximum rating of 30 is given in the case of full and mature knowledge of the topics. Reports and homeworks can be carried out during the course and, if sufficient to evaluate the student's skills, they can be used as an evaluation instead of the traditional exam.
EDUCATIONAL OBJECTIVES	The student will acquire knowledge and skills necessary and useful for the professional activities involved in the analysis of financial markets and risk analysis in order to better plan portfolio investments. The objective is to enable the student to acquire the theoretical and practical elements for an analysis of the financial system and the financial market by offering the necessary tools for professional activities. Furthermore, the student will acquire knowledge of the main aspects that characterize these systems and must have the ability to evaluate their peculiar characteristics.
TEACHING METHODS	Lectures, exercises and laboratories with extensive use of the R statistical software. Preparation of teaching support material uploaded to the institutional website. Comparison with Python procedures.
SUGGESTED BIBLIOGRAPHY	1- Lai T.L. e Haipeng X. (2008). Statistical Models and Methods for Financial Markets. Springer: New York. (Capp: 2, 4, 8 e 11). ISBN 978-0-387-77827-3. 2- Ruppert D. (2004). Statistics and Finance. Springer: New York. (Capp: 2, 3, 10 e 11). ISBN 978-1-4419-6876-0. 3- Tsay R.S. (2010). Analysis of Financial Time Series. Wiley: New York. (Capp: 1, 2 3, 7, 8 e 10). ISBN: 978-0-470-41435-4.

SYLLABUS

Hrs	Frontal teaching
6	Financial instruments. Prices and returns. Index numbers of stock markets and use of index numbers in finance and banking. Linear and non-linear models. Complete specification tests for economic analysis models (functional specification, homoscedasticity, restrictions, etc.).
6	Financial time series; stationarity and volatility. Arima models.
6	Arch/Garch models, symmetric and asymmetric models with normal and non-normal distributions.
6	Multivariate Garch and VaR. Financial instruments.

Hrs	Practice
6	Statistical source of financial and banking data. Use of R, SAS, GRETL, PYTHON.
6	Statistical applications with real data using different statistical softwares.
6	Data analysis with Python and specific applications in economics and finance.