UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze Economiche, Aziendali e Statistiche
ACADEMIC YEAR	2017/2018
MASTER'S DEGREE (MSC)	STATISTICAL SCIENCE
SUBJECT	STATISTICAL METHODS FOR FINANCIAL MARKETS
TYPE OF EDUCATIONAL ACTIVITY	C
AMBIT	21031-Attività formative affini o integrative
CODE	18169
SCIENTIFIC SECTOR(S)	SECS-S/03
HEAD PROFESSOR(S)	VASSALLO ERASMO Professore Associato Univ. di PALERMO
OTHER PROFESSOR(S)	
CREDITS	6
INDIVIDUAL STUDY (Hrs)	108
COURSE ACTIVITY (Hrs)	42
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	2
TERM (SEMESTER)	1° semester
ATTENDANCE	Not mandatory
EVALUATION	Out of 30
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

DOCENTE: Prof. ERASMO VASSALLO

PREREQUISITES	The course requires knowledge of statistical inference, statistical modeling and basic programming in R.
LEARNING OUTCOMES	Knowledge and understanding Acquire: 1. Statistical tools and techniques useful to the analysis of financial phenomena as well as measurement, estimation and interpretation with use of appropriate statistical software; 2. Understanding the evolution of financial phenomena, searching the sources of statistical data. 3. Skills on electronic spreadsheets, statistical and econometric software and skills on script writing with R. Applying knowledge and understanding Be able to: use independently statistical tools to answer financial questions and modeling and forecasting of short and long-term dynamics by using open-source softwares. Making judgments Be able to: identify scope and conditions of the proposed instruments, read correctly the results and evaluate their implications for analysis of the financial markets. Communication skills Be able to: explain conditions, tools and results of the analysis also to a non-technical audience through oral presentations or written reports. Learning skills Be able to: consult official reports and statistics from Istat, OECD, Eurostat, Bank of Italy, Italian stock exchange, etc. and relative scientific publications with analysis of the national and international literature.
ASSESSMENT METHODS	Written and oral test. The final mark takes into account both tests. The written exam focuses on practical skills and interpretation about the resolution of a problem of financial statistics usually with the use of a statistical model for time series or cross-section series. The written test takes about an hour and it is structured so that the student can successfully use different strategies and alternatives analysis. In particular, it is required attention to meaning and interpretation of the data and results. The oral exam is focused on all the topics of the syllabus and, besides, mathematical and statistical proofs or short exercises can be requested. The oral exam takes about half an hour. The student's assessment takes into account some factors in both written exam and oral exam: knowledge of concepts and subjects, practical use skills, proper use of statistical language. For each of these 3 dimensions is given a rating: absent, poor, adequate, good, excellent. The minimum rating 18 is given in the case of sufficient knowledge of the arguments, while the maximum rating 30 is attributed to a full and mature knowledge of the arguments. The overall evaluation is a simple mean of the two evaluations for the two tests.
EDUCATIONAL OBJECTIVES	The student will acquire knowledge and skills useful to the professional activities involved in the analysis of financial markets and market risk, in order to plan the best portfolio investments. The student must acquire skills on theoretical and practical elements aimed at analyzing financial systems and financial markets by providing the necessary tools to the professional activities. In addition, the student will acquire knowledge about the main features of these systems and will have the ability to assess their special features.
TEACHING METHODS	Lessons in classroom, specific lectures, tutorials, labs and homeworks with wide use of R statistical software. Preparation of teaching materials and slides uploaded on the course website.
SUGGESTED BIBLIOGRAPHY	Lai T.L. e Haipeng X. (2008). Statistical Models and Methods for Financial Markets. Springer: New York. (Capp: 2, 4, 8 e 11). - Tsay R.S. (2005). Analysis of Financial Time Series. Wiley: New York. (Capp: 1, 2 3, 7, 8 e 10). - Ruppert D. (2004). Statistics and Finance. Springer: New York. (Capp: 2, 3, 10 e 11).

SYLLABUS

Hrs	Frontal teaching
6	Financial instruments. Prices and financial returns. Index numbers of equity markets and use of index numbers in the financial and banking sector.
6	Statistical sources of the financial and banking data. Stock exchange data.
6	financial time series; stationary and volatility. Arima models.
6	Arch and Garch models
6	asymmetric Garch, Garch-M models. Multivariate Garch and VAR

Hrs	Practice
4	financial instruments
4	stationarity and volatility
4	Garch models