

General information	
Academic subject	Data Mining
Degree course	Economia ed Amministrazione delle Aziende (EAA)
Academic Year	3rd Year
European Credit Transfer and Accumulation System (ECTS)	6 CFU/ECTS
Language	Italian (English on demand)
Academic calendar (starting and ending date)	I° Semester (Lessons starting on October 5, 2022)
Attendance	Classroom attendance is not mandatory but recommended

Professor/ Lecturer	
Name and Surname	Massimo Bilancia
E-mail	massimo.bilancia@uniba.it, massi.bilancia@gmail.com
Telephone	NA
Department and address	Ionic Department - Taranto
Virtual headquarters	Microsoft Teams
Tutoring (time and day)	Tuesday 9.30 – 12.30 AM, Thursday 9.30 – 12.30 AM

Syllabus	
Learning Objectives	The objective of the course is to teach the basic elements of time series econometrics
Course prerequisites	Basic knowledge of statistics and mathematics.
Contents	<ol style="list-style-type: none"> 1. Basic tools for forecasting 2. Simple regression 3. Multiple regression 4. Decomposition techniques 5. Exponential smoothing 6. ARIMA models – AR and MA models, non-seasonal ARIMA models 7. ARIMA models – Model choice and forecasting 8. ARIMA models – Seasonal ARIMA models 9. Forecasting using neural networks <p>Lab will be based on the R CRAN software, freely available at http://cran.r-project.org.</p>
Books and bibliography	<ol style="list-style-type: none"> 1. M. Bilancia (2022) Dispense per il Corso di Metodi Statistici Multivariati – Versione 1.3 Settembre 2022. Dipartimento Jonico, liberamente distribuite sotto Licenza Creative Commons 4.0 CC BY-NC-ND 2. R.J. Hyndman, G. Athanasopoulos (2018) Forecasting: Principles and Practices, 2nd Edition. Liberamente disponibile all'indirizzo https://www.otexts.org/fpp2. Sul sito Web associato al testo è presente una grande quantità di dataset, materiale didattico ed esempi svolti in R 3. M. Mineo, Una Guida all'Utilizzo dell'Ambiente Statistico R (2003). Disponibile sul sito del CRAN
Additional materials	Reference 1. will be freely available on the dedicated Teams course room. References 2. and 3. are optional

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
150	0	48	102
ECTS			
6	0	6	
Teaching strategy			
Lectures + PC-based lab instruction by R. Lab lectures may be delivered in blended learning mode, subject to applicable regulations.			
Expected learning outcomes			
Knowledge and understanding on:	The objective of the course is to teach the basic elements of time series econometrics.		
Applying knowledge and understanding on:	The student will learn to estimate and apply in practice the models learned in the theoretical part of the course, through the use of the most commonly used data analysis tools, with specific applications to market forecasting and financial time series		
Soft skills	<ul style="list-style-type: none"> • <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> ○ The student will be able to decide on the most appropriate model to use for forecasting in the different intended application areas (economic and financial time series, sales analysis, volume and traffic time series forecasting, environmental and energy demand time series forecasting) • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ The student will be able to produce reports that include economic/financial forecasts • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ The course aims to provide the basic elements of time series econometrics in order to build on them with the possibility of taking more advanced courses 		

Assessment and feedback	
Methods of assessment	<p>PRACTICAL TEST AT THE CALCULATOR (duration 2 hours), consisting of the analysis of a real data set using the methods explained in the laboratory lectures: The candidate must prepare a MicrosoftTM WordTM document (or using Libre Office word processor) containing all R commands used, all textual and graphical output generated, and explanatory comments. The output file must be produced, as explained during the lessons, using R Markdown. You may refer to lab handouts which are printed on paper, to complete the practical exam: You will have available for this purpose the handouts of these lectures, reproduced in a more practical format of 4 slides per sheet. These slides must be printed as you received them, i.e., you may not annotate them or add your notes to them (also, you may not use the PDF file of the handouts: Violation of these requirements will result in your inability to use them during the exam). Consultation of other texts or documents (in written or electronic form) is not allowed and will result in immediate exclusion from the exam.</p> <p>There are no ongoing tests. Test results will be announced in an official Teams room designated for distribution of course materials.</p>

Evaluation criteria	<ul style="list-style-type: none"> • <i>Autonomy of judgment</i> <ul style="list-style-type: none"> ○ Ability to select the appropriate data analysis technique for the nature of the proposed problem. • <i>Communication skills</i> <ul style="list-style-type: none"> ○ Ability to produce a meaningful report on the proposed problem.
Criteria for assessment and attribution of the final mark	Final grade expressed in 30/30.
Additional information	