Programme of "Forecasting Models" LM-77 2nd Cycle degree in Administration Economics and Finance Teacher: Coccia Mimi			Language of the course: Italian/ English
Total number of hours: 42			ECTS credits: 6
Course period	1 <sup>st</sup> semester 2 <sup>nd</sup> semester	<b>1</b> <sup>st</sup> term: <b>2</b> october 1 <sup>st</sup> term: □	2 <sup>nd</sup> term: 20 december 2 <sup>nd</sup> term:

## Course objectives and learning outcomes.

Course target is to be able to choose the best approch to explain and solve an interpretation and/or forecasting problem. Indeed there are many mathematical models for forecasting and choosing an appropriate model for a particular forecasting application depends on the "data". Modelling methods evolution: interpretative and forecast models, indicators of model and forecasting goodness.

## Topics of the module.

Simple and multiple regression, specification model, parameter estimation, adjustment indexes, multicollinearity problems.

Stochastic processes, the autocovariance and autocorrelation functions, the partial autocorreletion functions, white noise processes, stationary time series models (ARMA: autoregressive and mooving average), non stationary time series models (ARIMA: autoregressive integrated mooving average models), seasonal time series models, forecasting, model identification, parameter estimation, diagnostic, checking and model selection,.ex-post analysis, transfer function model.

## Prerequisites and learning activities.

The requirements are to get through a mathematical and statistics base course.

## Teaching methods and language.

Lectures and exercises. Language: Italian / English

Ref. text english books:

- Brockwell P.J. and Davis R.D. (2002), Introduction to Time Series and Forecasting – II Edition-Springer.

- Newbold P., Carlson W.L., Thorne B., Statistics for business and economics, Pearson/Prentice Hall, 2007, 6<sup>th</sup> ed.

- W. Wey (1990), Time series analysis: univariate and multivariate method, II edition, Wey <u>- www.r-project.org</u> URL for software R and documentation.

Ref. text italian books:

- Crivellari, F.,(2006) Analisi statistica dei dati con R Apogeo.
- Iacus S. M., Masarotto, G. (2007) Statistica con R II McGraw-Hill.
- Vito Ricci (2006), Principali tecniche di regressione con R.

- Vito Ricci (2004), Analisi delle serie storiche con R.

- T. Di Fonzo e F. Lisi (2005), Serie storiche economiche: analisi statistiche e applicazioni – Carocci

**Assessment methods** consist of a computer test about forecasting model by software R and/or ITSMW and its oral discussion (written and oral exam).