# Statistics and Econometrics for Economy Decisions

## Prof. Riccardo Bramante; Prof. Maria Grazia Zoia

***COURSE AIMS AND INTENDED LEARNING OUTCOMES***

The aim of the course, divided in modules, is to teach students a comprehensive set of concepts and techniques required for understanding and carrying out the quantitative analysis – combining statistics and econometrics – of sources, measures and summary indicators, latent components, relationships and models for the interpretation and forecast of economic data.

At the end of the course, students will have acquired the ability to:

– develop summary price indicators and measure inflation;

– make temporal and spatial comparisons of monetary values;

– adequately represent time series graphically and use classical disaggregation methods;

– read and interpret the results of statistical analysis applied to time series and to regression analysis;

– choose between different estimation models and methods and test the hypotheses suggested by theory;

– carry out empirical analysis on real data using the *R* statisticalsoftware.

***COURSE CONTENT***

 First Module: *Prof. Riccardo Bramante*

*Basic economic data*

– Statistical methods for calculating GDP

– Index numbers (prices – industrial production and stock market)

– Spatial comparisons of economic aggregates

*Analysis of economics and financial time series*

– Parameter disaggregation and estimation methods using the ordinary least squares technique.

– Parameter estimation using the weighted least squares technique.

Second Module: *Prof. Maria Grazia Zoia*

– From regression to econometric modelling

– Ordinary least squares technique.

– Explanatory power of the model.

*Economic forecasts*

– Economic forecasting models.

– Forecast error analysis.

*The role of hypothesis testing in error distribution*

– The normal distribution and its implications.

– Beyond the normal distribution.

*Introduction to the R* *software*

***READING LIST***

For the first module

A. Predetti, *I Numeri Indici. Teoria e pratica,* Giuffrè, Milan (last ed.).

L. Santamaria, *Analisi statistica delle serie storiche economiche,* Vita e Pensiero, Milan, 2000.

E. Bee Dagum, *Analisi delle serie storiche: modellistica, previsione e scomposizione*, Springer-Verlag, Milan, 2002

For the second module

M. Faliva-M.G. Zoia, *Introduzione all’econometria,* Giappichelli, Turin, 2003.

***TEACHING METHOD***

Frontal lectures, esercises in the computer lab, experts’ presentations and seminars.

***ASSESSMENT METHOD AND CRITERIA***

Students will be assessed on the basis of a written exam for each module including exercises and closed and open questions. They will also have to take a mid-term exam on the topics of the first module. Further information on the mid-term exam will be made available through the Blackboard platform. The overall mark will be the average of the marks of the two modules.

***NOTES AND PREREQUISITES***

In order to attend the course, students are expected to have acquired the fundamentals of statistics (data analysis, probability and inference) in both the “Statistics I” and “Applied Statistics” courses, during the three-year degree programme of the Faculty of Economics.

Further information can be found on the lecturer's webpage at http://docenti.unicatt.it/web/searchByName.do?language=ENG or on the Faculty notice board.