



UNIVERSITÀ
CATTOLICA
del Sacro Cuore

Econometrics

PROF. CONSUELO RUBINA NAVA, PROF. ELISA TOSETTI

Course aims and intended learning outcomes

The course aims at getting the students acquainted with the methods and techniques of econometric models. The content of the course covers the main topics of both classical and time series econometrics.

Course content

The course is divided into two parts.

FIRST PART: *Prof. Consuelo Rubina Nava*

1. Introduction: the nature and scope of Econometrics;
2. The Classical Linear Model:
 - Basic Assumptions;
 - The Ordinary Least Squares Method;
3. The normality assumption and the maximum likelihood estimation;
4. Forecasting;
5. Violations of the classical regression model assumptions:
 - Multicollinearity;
 - Heteroscedasticity and generalized least square estimators;
 - Endogeneity and instrumental variable estimators;
 - Test for other model assumptions (over identification test, normality test ect.);
6. Some applications with R.

SECOND PART: *Prof. Elisa Tosetti*

1. Introduction to time series analysis:
 - Characteristics of time series;
 - Stationary time series;
 - Measures of dependence;
2. Univariate Time Series Analysis:
 - ARIMA models;
 - Estimation and model selection;
 - Forecasting;
 - Seasonality;
 - Integrated processes and testing for unit root testing;
 - Cointegration and testing for cointegration;
3. Multivariate time series analysis:
 - Introduction to multivariate time series;
 - Vector Autoregressive Models;
 - Stability conditions, estimation and model selection.

Reading list

D.N. GUJARATI, Essentials of Econometrics, McGraw- Hill, 2009.

M. FALIVA-M.G. ZOIA, Lecture in Econometric Theory, EDUCatt, Milano, 2016.



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M. FALIVA-M.G. ZOIA, Dynamic Model Analysis. Advanced Matrix Methods and Unit.-Root Econometrics Representation Theorems, Springer-Verlag, Berlin, 2009.
R.H. SHUMWAY-D.S. STOFFER, Time series analysis and its applications, Springer, 2016.
R.S. TSAY, Multivariate time series analysis, Wiley, 2015.

Students will be provided with class notes and supplementary teaching material during the course.

Teaching method

Lectures will be complemented with thematic seminars and tutorial exercise with applications.

Assessment method and criteria

For all students: written exam consisting of open-answer questions on the topics covered in the course. The written test may be possibly completed orally, if necessary.

For attending students: written mid-term test with open-answer questions useful for the final evaluation.

This assessment method will not change in the various exam sessions.

Notes and prerequisites

Further information can be found on the professor's webpages.