

5.0 credits	30.0 h + 12.0 h	1q
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Teacher(s) :	Gao Zhengyuan ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	Time series analysis requires to understand the notions of stationarity and non-stationarity, which will be pre-sented in an intuitive and detailed way by the use of examples of macroeconomic and financial time series. Then, econometric models adapted to model such series will be explained and applied. The theme of prediction is obviously very important for time series and will be covered for each type of model. Although the course is focused on the univariate approach, an introduction to multivariate aspects is foreseen. Inference methods (like ordinary least squares and maximum likelihood) are taught or reminded in the context of the models that require them.
Aims :	<p>The objective is to train students to use econometric methods for modelling and predicting economic and finan-cial time series. The emphasis is put on applications in macroeconomics and finance, and to the extent necessary for that, on understanding the methods and models.</p> <p><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i></p>
Content :	<p>Contents</p> <p>Regression analysis applied to time series (properties of OLS, autocorrelation)</p> <p>Stationarity and non-stationarity of economic and financial time series</p> <p>Autoregressive and moving average (ARMA) models</p> <p>Modelling and predicting trends and seasonal movements</p> <p>Unit root and cointegration tests</p> <p>Volatility modelling for economic and financial time series : autoregressive conditional heteroskedasticity (GARCH) and applications</p> <p>Inference by the maximum likelihood method (application to ARMA and GARCH models)</p> <p>Introduction to vector autoregressive (VAR) models</p> <p>Use of an econometric software and applications</p> <p>Methods</p> <p>Lectures, application exercices (using a software), article reading and reproduction of results</p>
Other infos :	<p>Obligatory econometrics course of the " Baccalauréat en sciences économiques et de gestion ", or an equivalent course.</p> <p>Oral or written exam. A part of the exam is traditional (in the form of questions on the topics taught) and another part is done in a computer room and aims at evaluating the capacity to apply the models and methods. A part of the final grade can be reserved for assignments to be done dur-ing the term.</p> <p>Some chapters of the book by Wooldridge (Introductory Econometrics), possibly augmented by lecture notes.</p>
Cycle and year of study :	<p>> Master [120] in Statistics: General</p> <p>> Master [120] in Business engineering</p> <p>> Master [120] in Agricultural Bioengineering</p> <p>> Master [120] in Mathematical Engineering</p> <p>> Master [120] in Economics: General</p>
Faculty or entity in charge:	ECON