UCLouvain

llsms2224

2024

Forecasting

5.00 credits	30.0 h	Q1

Teacher(s)	Candelon Bertrand ;
Language :	English
Place of the course	Louvain-la-Neuve
Prerequisites	You should have a knowledge of basic topics in statistics, econometrics and finance such as those covered in the following courses: Fundamental mathematical and statistical concepts (such as those covered in Mathématiques avancées et fondements d'économétrie [LECGE1337]) Advanced Finance [LLSMS2100A or LLSMS2100B] In addition, this course is reserved for students with a bachelor's degree in business engineering or students with equivalent quantitative method skills
Main themes	This course overviews topics in computational finance and financial econometrics (data sciences applied to finance). The emphasis of the course will be on making the transition from an economic model of asset return behavior to an econometric model using real data. This involves: 1. exploratory data analysis; 2. specification of models to explain the data; 3. estimation and evaluation of models; 4. testing the economic implications of the model; 5. forecasting from the model. The modeling process requires the use of economic theory, matrix algebra, optimization techniques, probability models, statistical analysis/econometrics, and statistical software (R). Both edX and DataCamp plateforms will be used to allow practical training and continuous learning on R.
Learning outcomes	**At the end of this learning unit, the student is able to :** 1 ***Upon completion of this course, students are expected to complete the following key tasks:*** 1. Have a good understanding of important issues in financial econometrics and computational finance; 2. Be able to apply concepts and tools learned in class. ***Upon completion of this course, students are expected to develop the following capabilities :*** 3. Knowledge and reasoning; 4. Critical thinking skills.
Evaluation methods	Weekly assigments, final project and oral defence.
Teaching methods	Lectures, inverted classrooms, workshops, interventions by experts, assigments, final projects
Content	The course covers the theoretical and practical aspects of time series forecast. The topics covered are: . Refreshing in time series conometrics. . AR, MA, ARMA processes. . Unit root and non stationarity. . VAR and VECM models. . New forecasting models **All empirical exercices and projects will be done with R.**
Inline resources	Moodle et teams
Bibliography	**Forecasting: Principles and Practice (FPP):** Rob J Hyndman and George Athanasopoulos, https://otexts.com/fpp2/ **Introduction to Econometrics with R (IER):** Christoph Hanck, Martin Arnold, Alexander Gerber, and Martin Schmelzer, https://www.econometrics-with-r.org/

Faculty or entity in charge	CLSM

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] : Business Engineering	INGE2M	5		
Master [120] : Business Engineering	INGM2M	5		