UCLouvain

llsms2224

2017

Computational Finance

5 credits	30.0 h	Q1

Teacher(s)	Béreau Sophie ;Gnabo Jean-Yves (compensates Béreau Sophie) ;
Language :	English
Place of the course	Louvain-la-Neuve
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.
Aims	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. - - - - *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".*
Evaluation methods	• Date: Will be specified later • Type of evaluation: Computer labs • Comments: 50% **Evaluation week** • Oral: No • Written: Yes • Unavailability or comments: 25% **Examination session** • Oral: No • Written: Yes • Unavailability or comments: 25%
Content	The following topics will be covered: 1. Introduction to R manipulation and programming (1x3h) 2. Expected utility framework and modern portfolio theory using R (3x3h) 3. Refresher on basic econometrics and linear regression (1x3h) 4. TS topics (including volatility modelling) (3x3h) 5. GMM estimation applied to asset pricing (1x3h)
Faculty or entity in charge	CLSM

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Business Engineering	INGE2M	5		
Master [120] in Business Engineering	INGM2M	5		