

## Computational finance

5.0 credits

2016-2017

30.0 h

1q

Teacher(s) :	Béreau Sophie ;				
Language :	Anglais				
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]				
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:  exploratory data analysis;  specification of models to explain the data;  estimation and evaluation of models; 				
	 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 :	Upon completion of this course, students are expected to complete the following key tasks: Have a good understanding of important issues in financial econometrics and computational finance; 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 :	You will be evaluated based on three components according to the following weights. The instructor reserves the right to modify the weightings to adjust for more or less material covered during the semester.				
	 Computer labs : 50%  Mid-term exam : 25%  Final exam : 25%				
Content :	The following topics will be covered:				
	Introduction to R manipulation and programming (1x3h) 				
	Expected utility framework and modern portfolio theory using R (3x3h)				
	<ul> <li>Kerresner on basic econometrics and linear regression (1x3n)</li> <li>TS topics (including volatility modelling) (3x3h)</li> </ul>				
	GMM estimation applied to asset pricing (1x3h)				

Faculty or entity in	CLSM
charge:	

Programmes / formations proposant cette unité d'enseignement (UE)							
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage			
Master [120] in Business Engineering	INGE2M	5	-	ھ			
Master [120] in Business Engineering	INGM2M	5	-	هر			
Master [120] in Management	GEST2M	5	-	٩			