


5.00 credits	30.0 h	Q1
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Teacher(s)	Candelon Bertrand ;
Language :	English
Place of the course	Louvain-la-Neuve
Prerequisites	<p>You should have a knowledge of basic topics in statistics, econometrics and finance such as those covered in the following courses:</p> <p>Fundamental mathematical and statistical concepts (such as those covered in Mathématiques avancées et fondements d'économétrie [LECGE1337])</p> <p>Advanced Finance [LLSMS2100A or LLSMS2100B]</p> <p>In addition, this course is reserved for students with a bachelor's degree in business engineering or students with equivalent quantitative method skills</p>
Main themes	<p>This course overviews topics in computational finance and financial econometrics (data sciences applied to finance).</p> <p>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.</p> <p>This involves:</p> <ol style="list-style-type: none"> 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. <p>The modeling process requires the use of economic theory, matrix algebra, optimization techniques, probability models, statistical analysis/econometrics, and statistical software (R).</p> <p>Both edX and DataCamp platforms will be used to allow practical training and continuous learning on R.</p>
Learning outcomes	<p>At the end of this learning unit, the student is able to :</p> <p>Upon completion of this course, students are expected to complete the following key tasks:</p> <ol style="list-style-type: none"> 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. <p>Upon completion of this course, students are expected to develop the following capabilities :</p> <ol style="list-style-type: none"> 3. Knowledge and reasoning; 4. Critical thinking skills.
Evaluation methods	Weekly assignments, final project and oral defence.
Teaching methods	Lectures, inverted classrooms, workshops, interventions by experts, assignments, final projects
Content	<p>The course covers the theoretical and practical aspects of time series forecast. The topics covered are:</p> <ul style="list-style-type: none"> . Refreshing in time series conometrics. . AR, MA, ARMA processes. . Unit root and non stationarity. . VAR and VECM models. . New forecasting models <p>All empirical exercices and projects will be done with R.</p>
Inline resources	Moodle et teams
Bibliography	<p>Forecasting: Principles and Practice (FPP): Rob J Hyndman and George Athanasopoulos, https://otexts.com/fpp2/</p> <p>Introduction to Econometrics with R (IER): Christoph Hanck, Martin Arnold, Alexander Gerber, and Martin Schmelzer, https://www.econometrics-with-r.org/</p>

Faculty or entity in charge	CLSM
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Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] : Business Engineering	INGM2M	5		
Master [120] : Business Engineering	INGE2M	5		