UCLouvain

lecon2500

2019

Mathematics and Statistics for Economics

In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

5 credits	30.0 h	Q1

Teacher(s)	Davila Muro Julio ;Van Bellegem Sébastien ;
Language :	English
Place of the course	Louvain-la-Neuve
Main themes	For the mathematics part, the themes of matrix algebra, functions, optimization, and difference/differential equations. For the statistics part: multivariate distributions and related concepts. The two parts are linked in particular by matrix algebra.
Aims	1 The purpose is that students learn the most important mathematical and statistical tools needed for advanced courses in macroeconomics, microeconomics and econometrics. The course serves mostly to refresh students' knowledge in certain topics, and to ensure that all students taking the advanced courses have a common mathe-matical and statistical level. - - - - *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	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** Written exam
Teaching methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** Methods: Lectures and home works
Content	Mathematics : Matrix algebra (inverse, rank, derivatives, eigenvalues, diagonalization and factorization, quadratic forms). Met-ric and topological spaces, vector spaces. Real functions on Rn (continuity, concavity, differentiability, Taylor expansion, mean value theorem, implicit function theorem). Static optimization (constrained and uncon-strained). Difference and differential equations (steady states, stability). Statistics: Multivariate distributions: joint, marginal and conditional distributions, (conditional) moments (variance-covariance matrices), independence in probability and linear independence. Law of iterated expectations. Transformation of random vectors. Multivariate normal distribution. Quadratic forms in normal vectors and related distributions (Student, chi-squared, Fisher)
Faculty or entity in charge	ECON

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Master [60] in Economics : General	ECON2M1	5		
Master [120] in Economics: General	ECON2M	5		